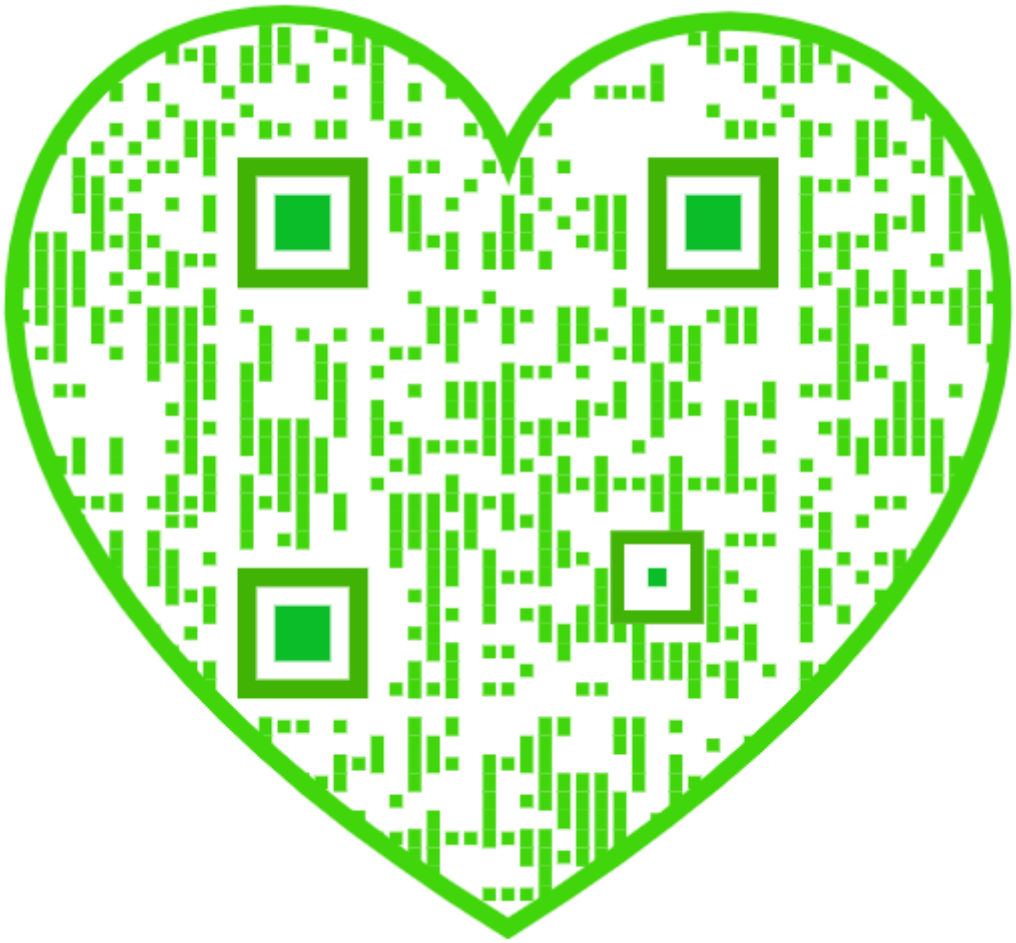

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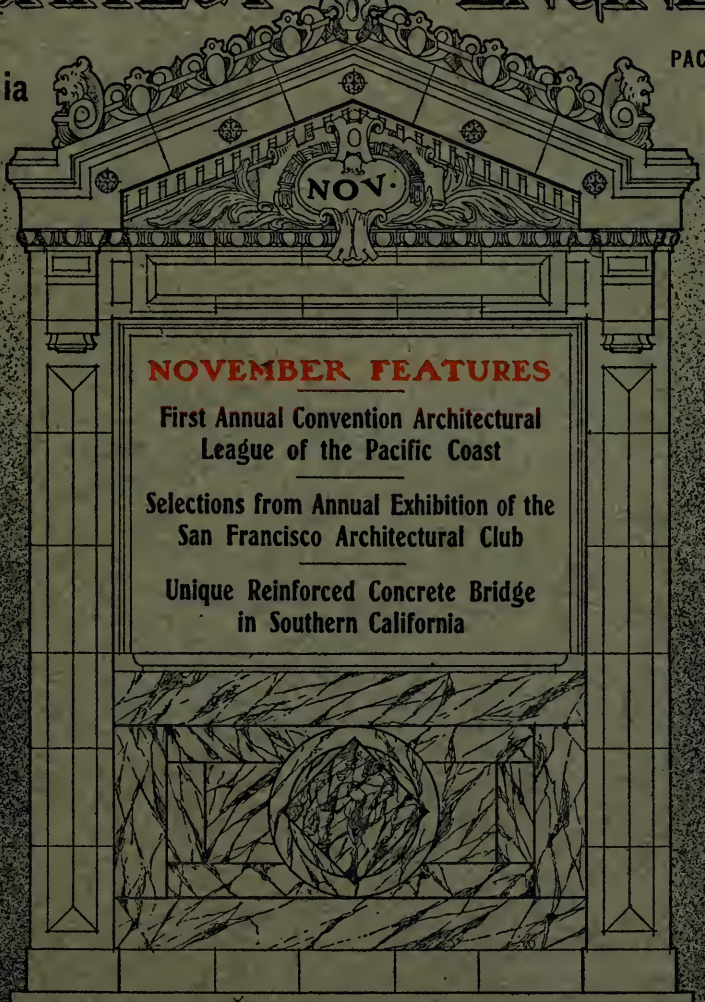

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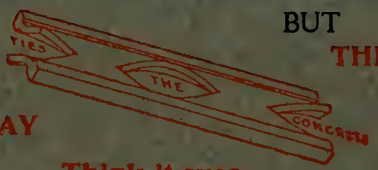

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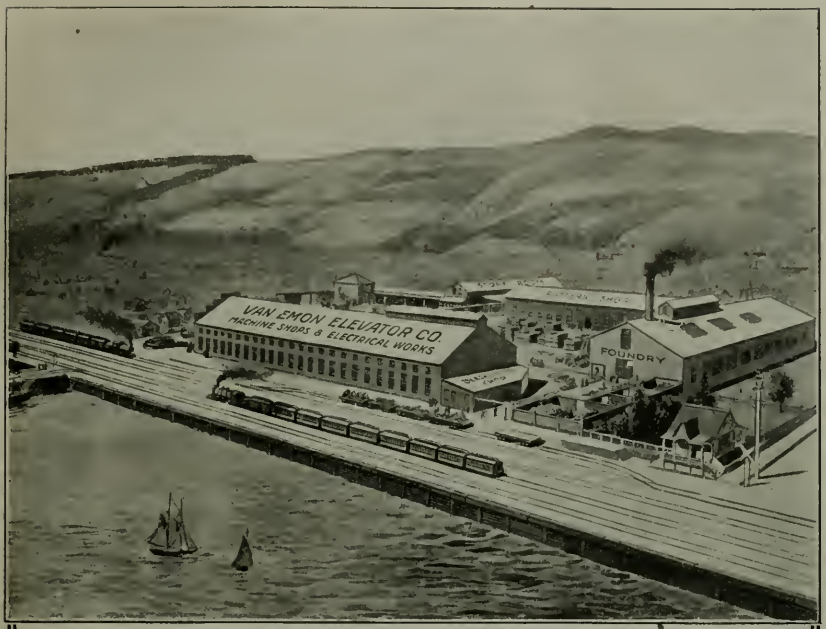

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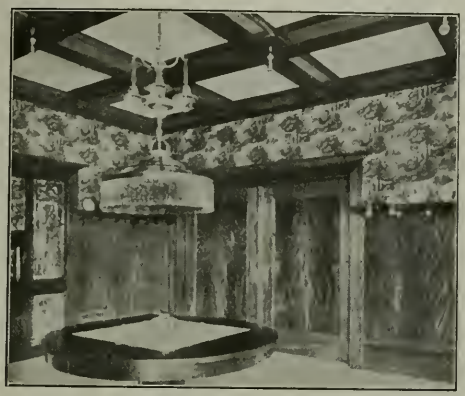

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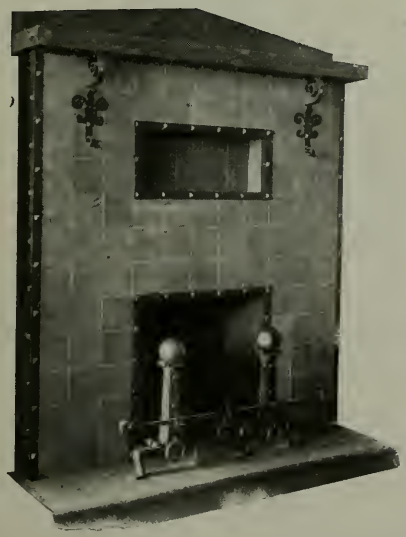

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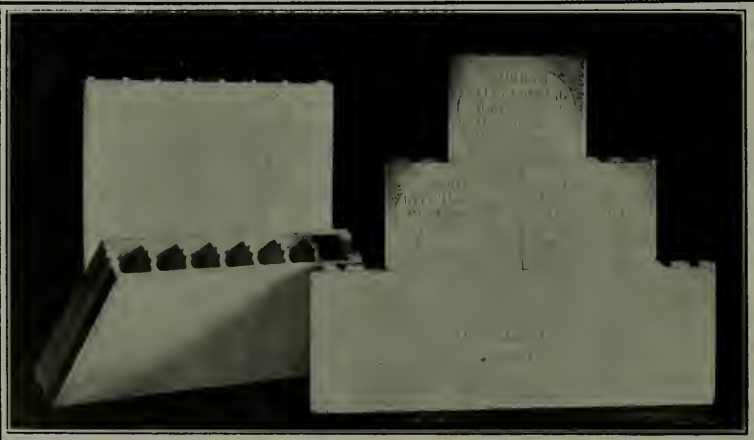

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Pacific Bldg., S. F.
Leona Chemical Co..1256 Broadway, Oakland
Grant Gravel Co.....87 Third St., S. F.

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Boyd & Moore.....356 Market St., S. F.

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White Brothers,
Cor. Spear and Howard Sts., S. F.
Dieckmann Hardwood Co., Welch Bldg., S. F.

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Reno Hard Wall Plaster, sold by Western Building Material Co.,
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Adamant Co.....Worcester Bldg., Portland
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A. W. Curry.....116 Grand Ave., Portland
Robert Dalziel Jr. Co., 418 13th St., Oakland
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Burness & Martin, 129 Sixteenth St., Portland
T. C. Thronson, 415 Hawthorne Ave., Portland
Thos. E. Hulme & Co., 275 Fifth St., Portland
C. L. Johnson & Co., 285 Grand Ave., Portland
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Gilley-Schmid Co., Inc.,
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Machinery and Electrical Co.,
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Steiger & Kerr Stove & Foundry Co.,
Folsom and 19th Sts., S. F.

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California Magnesite Co.,
Slauson Ave., Los Angeles

MAILING CASES
Mailing Case Mfg. Co., 264 Natoma St., S. F.

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Mangrum & Otter.....561 Mission St., S. F.
W. W. Montague & Co., 557 Market St., S. F.

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Sixteenth and Carolina Sts., S. F.
Western Magnesite Development Co.,
Metropolis Bank Bldg., S. F.
Columbia Marble Co., 268 Market St., S. F.
Vermont Marble Works, Brannan St., S. F.
587-591 Market St., S. F.

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Ferdinand Wagner.....607 Waller St., S. F.

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Corvallis & Eastern Ry.....Portland, Ore.

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McCormick-Henderson Co.,
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Western Builders' Supply Co.,
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Metropolis Bank Bldg., S. F.
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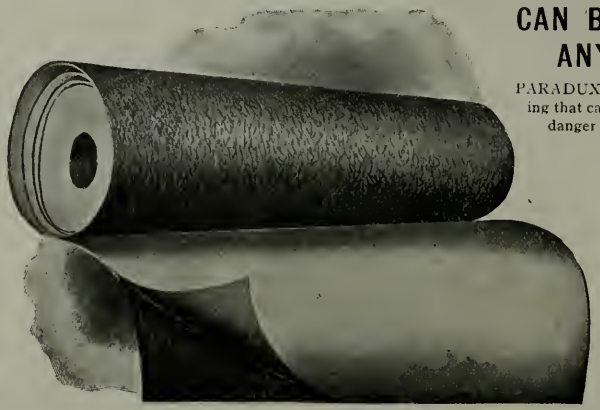

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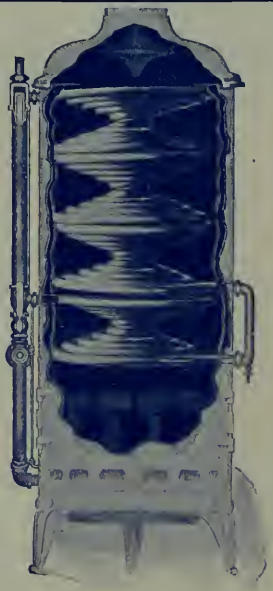

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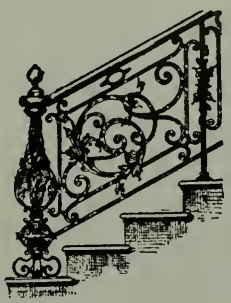

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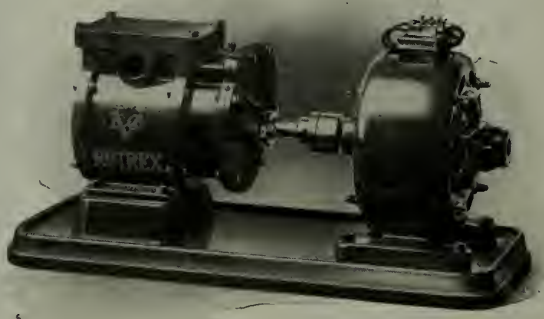

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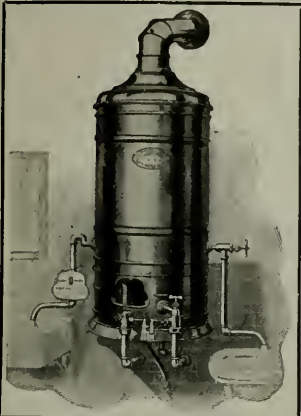

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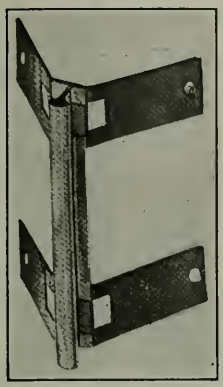

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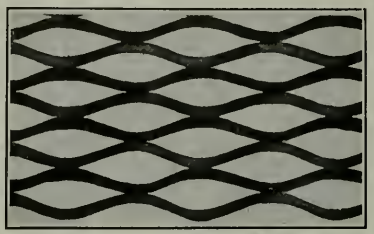

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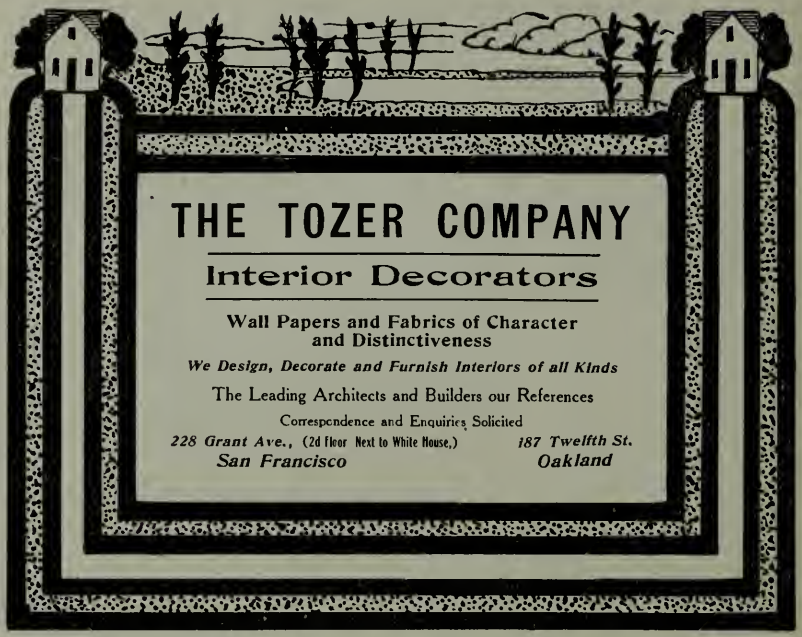
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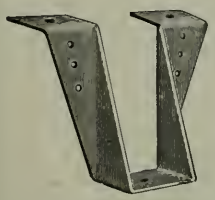

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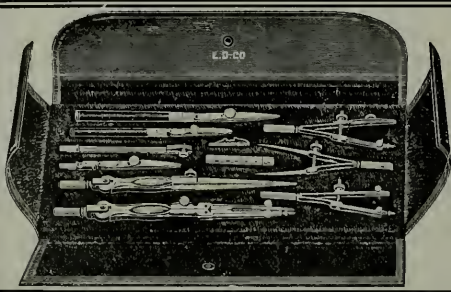

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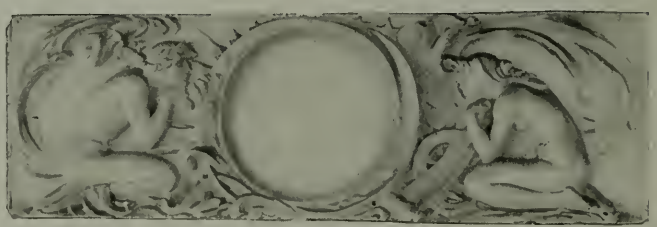

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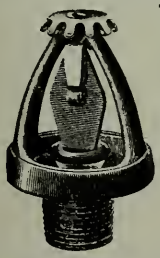

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MR. ALFRED F. ROSENHEIM
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November, 1909

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Architect and Engineer

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Pacific Coast States

VOL. XIX. NOVEMBER, 1909. No. 1.

Coast League Should Adopt Policy of the American Institute

By ALFRED F. ROSENHEIM, President A. L. P. C.

IN THE conduct of the Architectural League of the Pacific Coast, of which I have been elected president, our policy should be identical with the policy of the American Institute of Architects, and we must act in unison and harmony with it, that its scope and usefulness may become truly national instead of nominally so.

I believe the Institute is at last coming to a realization of the necessity of holding its conventions alternately in each of the four sections of the country, and will, I am sure, very soon honor the Pacific Coast with the first meeting in its history.

If the Western chapters can manage to send comparatively large delegations to the East, certainly the Eastern chapters, having larger membership and larger means, should be able to do proportionately better with respect to the West.

As representation in the conventions is directly dependent on the number of Institute members, either Fellows or Associates, in the several chapters, it is highly important that chapters increase their Institute membership as rapidly as possible, so as to give them a larger share in the ministration its affairs.

This leads me to suggest that every member of the Coast League should consider it his duty to submit an application for admission to the Institute's ranks at once.

First Annual Convention of the Architectural League of the Pacific Coast

THE first annual convention of the Architectural League of the Pacific Coast was held in San Francisco October 18th to October 20th. Delegates were present from Seattle, Portland, Los Angeles and other Coast cities and much enthusiasm was manifested. Mr. Cass Gilbert, president of the American Institute of Architects, and Mr. Irving K. Pond, vice-president of the same organization, were among the guests of honor. The opening session was held in the Monadnock building. In the absence of the Mayor of San Francisco, Hon. James D. Phelan delivered the address of welcome. He said in part:

"I bid the visiting architects welcome to an entirely new city—a city erected on the same ground that the old one occupied. After the disaster we were practically only a townsite, but a very excellent townsite; only a townsite because the disaster in its completeness left nothing to be desired in the way of destruction. All the principal architectural piles in the city were destroyed, and we have witnessed during the past three years a most successful development. We who have been very close to it cannot fail

to appreciate what has been accomplished by the architects and builders in San Francisco during the past three years, and hence it is fitting that the Architectural League should meet in San Francisco at this time.

"The old San Francisco represented a growth of about sixty years, and in its composition represented all types of architecture and all classes of construction, good and bad; but since the fire we have only good construction for the most part.

"Of course, the exigencies of financial conditions sometimes limit well-meaning citizens in their expenditure to a class of building which is not according to the plans of the best architectural form, and we can only have commiseration for those people. We cannot blame them, but even a cheap building can be made comely, and I am glad to see that our architects have been making a durable city that is not built upon a rock.

"Regarding San Francisco as a townsite, it may be interesting to you strangers to know that in the early days it was not regarded as a favorable location, and men who were wise in their own departments—such men as General Sherman—believing that the city on the Bay of San Francisco would be constructed at the confluence of our great rivers, the San Joaquin and the Sacramento, which meet the bay near the city of Benicia, and they made investments there in town lots; and General Sherman in his memoir says that it was a most surprising and unexpected thing that the town should grow upon the townsite of Yerba Buena, as the only means of communication with the interior States was by means of rivers at that time, and he could not see why San Francisco should exist at all—that the city was a mistake. Benicia at that time was a townsite and designated by the name of Francesca, which was the baptismal name of the woman whose husband presented the townsite to the founder, and the people of San Francisco changed the name from Yerba Buena to San Francisco, giving the town the same name as the bay. The people of Francesca protested that San Francisco was too near the name of Francesca, and they were obliged to change their name to Benicia.

"In 1906 when the Spring Valley Water Works broke down, largely because the board of directors failed to act upon the advice of their engineer, Mr. Schussler, who advised the directors to strengthen the system, especially where the main feeding pipes were over marshy lands, the city was destroyed by fire; and now we are installing an auxiliary water system where in times of great stress we can draw upon the waters of the bay, so that now we are powerful to meet fire. Our buildings were not destroyed by earthquake, except those which were of flimsy construction upon very poor foundations."

In conclusion Mr. Phelan spoke of the work that had been done toward establishing a civic center and encouraging the "city beautiful idea." He said:

"The future of the beauty of San Francisco is yours. You are the high priests of architecture, and it devolves upon you to direct the public in the work which would result in their mutual benefit. You are the priests at the altar of beauty. If you can elevate the minds of the people to mutual benefit in that sentiment which is true, then everything will be easy. The city as a community will progress in lines of business and beauty; the citizens in erecting their houses or their places of business might pause for the sake of beauty, if we could elevate all men in that line. If the city is more prosperous and the business house is more prosperous, the business man will be more ready to receive the beautiful. Teach him the art of beauty, and he will get it."

President Willis Polk occupied the chair and made a few explanatory remarks in regard to the mission of the League. He said:

"The purpose of this meeting, as pointed out by Mr. August G. Headman, is primarily to take the draughtsmen who are compelled to work for the hard-hearted architects and to go to them as much as possible, and to point out to them the principles of success—not only in design, but in his integrity; not only in construction, but in decoration, and in all the many things that comprise the successful practice of the profession of architecture; and not only are we doing them a favor, but we are honoring ourselves and bestowing a gift of prosperity. Now, it is the definite purpose of this organization to try and accomplish that end. It will not be easy to do so. It will be very hard indeed to reach the young man, because, first, most of the young men themselves will be indifferent. They could not possibly have any comprehension of the value to them in the future of the study of these things at the present. It is not in the nature of young men to have comprehensive minds. Their minds are undeveloped. On the other hand, it will be very hard to do anything for them on our account, because we will be too busy and will not have time to devote to it. The problem is exceedingly difficult. It is the difficult problems that ought to be interesting and are interesting to men. Therefore, greater energy will be applied to solve the problem.

"The next and one of the most important purposes of this meeting," said the speaker, "is to try and reach the outside public. The public at large only possesses and could only possess a superficial knowledge and interest in architecture. The business man who is going to build a building does not look for an architect so much as he does for a successful business man, no matter how large the building may be; the men in control are in control of their destinies. If, incidentally, they can get an architectural touch on their buildings, they are satisfied. They are always ready to go along the street and say, 'That is a fine building', but when it comes to building their own building they are satisfied to say that it is well constructed."

Brief addresses were made by President Cass Gilbert, Louis C. Mullgardt and others. The remainder of the morning session was taken up with the appointment of committees, etc.

Second Day's Session.

The second day's session of the Convention of the Architectural League of the Pacific Coast opened at the Greek Theater, Berkeley, on Wednesday, October 20th, at 11 A. M.

Mr. Willis Polk acted as chairman and made the following introductory remarks:

"We have you here this morning for the final session of the Architectural League of the Pacific Coast. It is perhaps appropriate that a meeting of architects should be held in this, the Greek Theater of the University of California. It is not necessary to tell you gentlemen that we are sitting almost among the same surroundings, under the same beautiful heavens and amid the same ether and design as has always been the highest inspiration to architects; it is the air of simplicity which constitutes the highest expression in architecture, and it is here expressed in the very finest degree. This building was dedicated for the uses of the public, under auspices most favorable to the occasion, by the head of the University; he is not with us to-day, but we have, in the absence of the president, Professor

Benjamin Ide Wheeler, his representative, Mr. Lange, whom I now present to you."

Mr. Lange: "Gentlemen of the Architectural League of the Pacific Coast: We of the University of California are supposed to practice the fine and useful art of education, and you of the Architectural League practice the fine and useful art of architecture. You and we have the same bedrock purpose in view—that is, to embody beautiful ideas in endurable forms. There is one bond of union now in carrying out our common purpose; we of the University are trying to build up the love of education on this Coast and throughout the country, so we must needs be not only teachers, but education architects; but in constructing the large part of the environment, you must not only be architects, but also educators, whose work is linked with ours and encourages a common service and acts as a warning to others. I often think how architecture and education should be made to flourish together. If so, every school on the Pacific Coast could be made a thing of beauty and a joy forever. Our children could be taught these beautiful ideals imparted by art and inculcate them into our private dwellings and public buildings and thus live on a higher plane because of the architectural glory which surrounds us—although the teachers sometimes find that the noise on the campus is deafening and the voice of Mr. Howard is supreme. In this new land, this new civilization, it is our endeavor to find in architecture and education the forms that will best express the character and spirit of our American Pacific Coast. Now, gentlemen, I am sorry not to be able to tell you more at this time. I bid you all a cordial welcome, and you should not find it difficult to feel at home."

Professor Bernard Moses.

Professor Bernard Moses, a member of the Faculty of the University of California, was next introduced. He said:

"It is a great pleasure, Mr. President, for me to be counted in, even temporarily, with you gentlemen who do things, whose business it is to erect landmarks of our country, whose business it is to build the national monuments, the monuments which will stand when a good many other things of the national life have passed away. It is your business to build so that the things which you construct will be, like this place, the goal of pilgrimages, for this theater, constructed by one of your number, has become a kind of object lesson for children; they come here from all parts of the world, and they come by the tens of thousands. We, who utter words, have our day; like the wind, we blow about the campus here; but our deeds are like the silence that comes after the wind. You have the better end of the undertaking; your work lasts very much longer. We sometimes in our serious moments write books, but these are but temporary records. The oldest records are the works of architects.

"It was my good fortune some time ago to visit Narcius and to observe some of the results of the excavations that had been made at that once celebrated center. There was a good deal to learn there in that ancient city that existed two thousand years before the Christian era. We found there plenty of writings; they were in clay; they were bounteous; there were bushels of them—but no one could read them. Books were there, but the language was unknown; but we could read from the architectural remains, from the foundations of the buildings, from the stairways that still remained; through these we could read very much of the life of the men and women who occupied that place. Architectural undertakings are the best examples we have of definite ideas; they are the most persistent efforts, those efforts that are seeking to realize some definite architectural

Detail of California Building, Alaska-Yukon-Pacific Exposition
Valere de Mori, Designer

Native Sons Building, San Francisco

Righetti & Headman, Architects *E. H. Hildebrand, Associate*

White Investment Company Building, San Francisco
Louis P. Hobart, Architect

end. Some of you have probably gone by the great cathedrals in Spain and remember the work of the stone cutters. Men have worked there for four hundred years in attempting to carry out the vast ideas and plans. It is a peculiar task of the architects in this country to cultivate the taste of the American people. It is your peculiar task because your works are seen by more persons than the works of any other artist. Your work is out of doors largely, and we are out of doors.

"On the architects rests a peculiar responsibility in attempting to cultivate and bring back taste in the American people. I say everything back has been lost very largely for this reason: when we left the older part of the world we left practically everything connected with it. We left behind us the political system and the social system of the old world; we cut ourselves off from everything connected with it. The people who came to New England brought none of the old traditions. They developed special ideas that seemed to them all-important. That was the ethical idea, and so much stress did they lay on this ethical idea that they forgot most of the other ideas. They forgot the ideas of beauty, and in this respect they stand in contrast with our neighbors, the Latin-American people, who came from Spain with all the traditions of Spain respecting culture and beauty. They brought that portion of artistic form which our ancestors left on the way. This feature, you will observe, is especially prominent. That is the portion of the beautiful things in architecture that our ancestors built under the impression of their ideas.

"Take, for example, the little church in New England. It was adapted to the economical conditions of the people of New England. It was not a beautiful thing, if beauty was regarded as desirous. It appealed to the senses. Under that idea, we sacrificed a great deal, losing all the instincts. Our friends in the South came with very different ideas; their ideas were full of beauty. Moreover, our houses were not things of beauty—very comfortable, but not things of beauty, whereas there are very few structures that have some beautiful features of the old Spanish-American houses. Those houses appealed to them—the sentiments they brought with them. In this respect we have very much to do in order to catch up with the procession. We have fallen behind because our ideas of beauty were starved through our ethical pro-religious ideas of New England.

Inherit Spanish Tradition.

Now, there is certain pride in this part of the country. Californians brag a good deal, but not as much as some people say we do. We sometimes say there is hope for the redemption of the race in California. A certain kind of art lives out of doors and must live out of doors. Music lives indoors, but music here can live out of doors. We have here, then, the climate under which art has flourished. We have the climate of southern Greece, of Italy and Spain, that is bound to have its effect in future. We may be able, through some of the influences, to redeem ourselves and to gather up, perhaps, what we have lost.

"Then we have here some of the Spanish tradition, having a little display of it over in the city just at the present time. We are trying to adapt ourselves to these conditions. At any rate, we have perhaps inherited here more of the Spanish tradition than in any other part of the country. We have kept it pretty well, not only here but throughout the country. The minds of men are being turned to the South and to the Latin-American traditions. The Latin-American people have greater respect for the forms of social life than we have. There is an opportunity for us of the United

States to be encouraged. What we have lost may be in some sense redeemed, and it depends on this convention and other conventions in the same profession to redeem our taste. Now, we have here, then, certain elements that are quite necessary for the improvement of the artistic sense of the American people.

"Here on this Coast it should be necessary that we should be influenced in an ethical sense. We should be forced to observe honesty. The trembling here of which we have a little bit once in a while encourages us to be honest in building, and then by reason of our attachment to Spanish tradition we have something of generosity to expect. Generosity and dignity will probably enter into the structures that are made in this country; that is because we have inherited somewhat from the dignity of the building of Rome and carried through the Latin-American tradition. This we may expect, and we rely upon you to make us depend on your expectations to have honest and dignified buildings. I am very glad, gentlemen, to have had this opportunity to be counted in with you."

Mr. Polk: "It is a matter of gratification and almost a matter of surprise to professional architects to find one of another profession whose sympathies and observations so keenly reach the tenderest chord that responds to an architect's pulsating heart. We have here to-day a great many earnest young men. We have here a few earnest middle-aged men and perhaps one, or perhaps more, earnest old men. It would perhaps be impossible to contradict a statement that such earnest old men were once earnest young men. It is only the earnest young man who is able to remain earnest in old age. The earnest young man is the hope of posterity and the reward of the earnest old man. All of the young men who are here to-day will be glad to hear from the old man that I know of, who, I remember, when I was young was a member of architects' clubs and dreamed that some day he would be at the head of the profession, or perhaps be honored by the highest office in the gift of the profession."

President Cass Gilbert.

With this picturesque but not entirely accurate introduction, Mr. Cass Gilbert, president of the American Institute of Architects, spoke as follows:

"Gentlemen, I heard the other day that there was a celebration at Dayton, Ohio, in honor of the invention of the flying machine. The city was decorated in red, blue, yellow and white. Country people came from miles around, and when the whole performance had been gone through the inventors of the flying machine were brought forward and were placed on the platform and asked to make a speech. They advanced to the front of the platform and said:

" 'Gentlemen, I thank you.'

"Their speech was simple, but I do not think that I could have been persuaded to say that much. But in calling on me for a speech gives me the opportunity of declining the distinction which Mr. Polk has placed before you, the distinction of being an old man. Here is Irving Pond, old enough to be my grandfather. Mr. Howard was in the profession years before I was born. I decline the distinction, Mr. Polk; I am not old. Whatever your point of view might be, I am not an old young man nor a young old man. I have always considered myself as being in the class of young men, and I am going to still; but youth, with its aspirations, its dreams, its opportunities, the future it can make for itself, is, after all, the youth of the heart, whether old physically or young. When the man ceases to be young at heart he ceases to be a young man. Cato read Greek at

eighty; Socrates when at fourscore years was at his best. The time may come—some sixty years hence—when I should like to join that band, not here.

"I am seriously amazed; I am filled with amazement; it gives me the greatest pleasure to be in this place; I have often heard of it; it has never before been my fortune to be in a Greek Theater, excepting once, and that was in the Lyceum Theater, out of Florence. The impression that one gets here is marvelous; the very rudeness and picturesque design of this splendid amphitheater, with its spots of light on the other side, gives one an impression of the great extent of its architecture.

"I would come any distance to see such a splendid piece of work. Nothing has been left undone to make it complete. Perhaps people dressed in the costumes of early days would add something to the color. It is a beautiful monument and will be enjoyed by those who come after us, with which thought all heartily agree, but we have never put the ethical effect, or influence, upon architecture as combined with the ethnical effect—that is, the effect of races; Japan and Spain bringing their influence together with that of New England and creating a new Athens, a new Greece in its entirety, and all the beautiful country of Sicily and Southern Italy.

"I cannot imagine a place where there are greater opportunities for architectural development. The people are behind you; they want it; forget the Georgian architecture of New England; forget the Elizabethian style of England; forget it and adopt the precedent of the Southern latin countries like Spain and Italy. You have brought the Morosque, the Roman, but also include the glorious colors in which the Romans themselves were lacking, the influence of the Spaniards, who came here after that influence had been indelibly impressed. I know of no place where such architectural beauty can be created as here. I do not know how to thank you. I arose in a spirit of levity, but I now feel profound. This society on the Pacific Coast is a great forward movement and the work that you are doing must produce good results."

Mr. Polk: "It might be said that the Architectural League of the Pacific Coast, which was conceived by Mr. E. F. Lawrence, of Portland, Oregon, has not yet the distinction of being born; it is in process of formation; so far the Portland Architectural Club, the Washington State Chapter of the American Institute of Architects, the Seattle Architectural Club, the Southern California Chapter, the San Francisco Chapter of the American Institute of Architects, are its component parts. Each of these organizations has representatives here to-day and each is represented on committee appointed on Monday to formulate some line of work for the future. The successful continuance of this organization will be in the hands of the coming executive officers, who will be elected to-day. Its health, growth and full development will be in the hands of those that come after. In addition to the representatives of the societies on the Pacific Coast, besides Mr. Gilbert, of New York, we have an earnest gentleman with us to-day, possessed with an ambition which he has never been able to gratify; an earnest purpose, which has always lead him onward and upward; who perhaps holds dearest among his many ambitions those natural ones of worldly distinction, but unlike many ambitions that he may be able to gratify, there is one, and that is, he holds the highest office in the gift of his profession. I take pleasure in introducing a master of those useful ambitions, Mr. Irving K. Pond, of Chicago."

Irving K. Pond.

Mr. Pond: "Gentlemen, the program says an address by so and so, or by Mr. Burnham. I wish he was here; but the fact still remains that I am among friends and among brothers, but like one of the great Romans, I came not here to talk; I came to bring hearty greetings from our friends in the East to the friends across the plains. I came in on a delayed train; I came into Seattle five hours late and into San Francisco almost as late, but when I arrived and saw the gorgeous sight that was before me, I felt that the impulse of the occasion would cause the trains to bound and reach those points ahead of time instead of being delayed. As I brushed off the dust of the plains and washed the smoke of Chicago from my eyes, I felt that here we were in an atmosphere that would tend to make us do something original.

"Now, Mr. Gilbert said what I wanted to say. There are many ways of telling a story, but I am in the position of the man that was rescued from drowning; when the supposed corpse lay on the beach, his rescuer bent over him and while meditating what to do, he tore his hair and remembered that there were twenty-three rules for reviving a drowning man, and while he was thinking which rule to apply, the supposed corpse woke up and said: 'Did anyone say anything about brandy?' and then added: 'I do not care for the other twenty-two.'

"We ought to display ourselves on a high ethical plane and we are trying to. We have come across these plains, over the Divide, and have washed the superficial precedent of New England from us and are now in touch with Spain, the Spanish provinces and the Orient. I do not know how I could, without serious thought, phrase my expression of the ethical relations, but there is something here that strongly appeals to the heart. Once more bringing the best wishes of the friends in the East to you, I thank you."

Mr. Polk: "I have just received a telegram from Portland, Oregon, saying that the Portland Beaux-Arts Atelier, organized on October 18th, has twenty members and is a candidate for membership in the Architectural League of the Pacific Coast. I have also a telegram from E. F. Lawrence, Vice-President of the League, and really its founder, sending his hearty congratulations and sincere regrets for not being able to attend, having just returned from the East, saying nothing of the apology due to you for the non-appearance of the President of this league, who I expected to be present. Now the success of this session will depend on the work of the different committees."

Future Conventions.

It was decided that the conventions of the Architectural League of the Pacific Coast shall be held in rotation by the four cities now representing the League, and the series to be completed in the following order: Los Angeles, Seattle, Portland, San Francisco, this sequence to be permanent, and in the event of any other cities joining the League, they are to have the convention in the order of their joining.

The Nominating Committee, consisting of David J Myers, David Lewis, Fred H. Meyer, Myron Hunt, Sylvain Schnaittacher and August J. Headman, recommended the following names for election as officers of the League: For President, Alfred F. Rosenheim; Vice-President, E. F. Lawrence; Secretary, John Kremple; Treasurer, W. R. B. Wilcox.

The report of the Committee on Constitution and By-Laws follows:

ARTICLE I.

Name and Object.

Section 1. The name of this association shall be the Architectural League of the Pacific Coast.

Section 2. Its object shall be the advancement of the interests of the architectural profession.

Section 3. The means of attaining this object shall be, principally—

1st. By affiliating the architectural associations now existing and by the formation of similar organizations in cities where none now exist;

2nd. By a circuit of annual architectural exhibitions;

3rd. By an annual convention of architects;

4th. By the promotion of professional education.

ARTICLE II.

Membership.

Section 1. This League shall be composed of active, corresponding, associate, and honorary members.

Section 2. Any organization of architects within the region covered by the League shall be eligible for active membership.

Section 3. Any architectural organization outside the region covered by the League is eligible for the corresponding membership.

Section 4. Any architect of good standing in a community of this district, which supports no architectural organization, is eligible for associate membership.

Section 5. Any person notably aiding the cause for which this League is organized shall be eligible for honorary membership.

ARTICLE III.

Government and Officers.

Section 1. The government of this League shall be vested in an executive council comprised of three delegates from each of the associations which are active members.

Section 2. At each annual convention the executive council shall elect from among its own number the following officers, viz: President, Vice-President, Secretary and Treasurer, each with the customary duties of such office.

Section 3. All officers shall be ex-officio delegates and members of the executive council.

Section 4. All officers and delegates shall serve until their successors are elected.

Section 5. For the purpose of the convention of 1909, all present who are members of associations belonging to the League shall act as members of the executive council in the election of officers for the ensuing year.

ARTICLE IV.

By-Laws.

Section 1. The executive council shall draw up By-laws for the transaction of business, and shall have power to change such By-laws from time to time by two-thirds votes.

A motion was thereupon made to adopt the report of the committee as a whole, which was duly seconded and carried.

Report of Medal Committee.

The Medal Committee reported as follows:

"Mr. President and Gentlemen: The committee to investigate the advisability of offering a medal for the most successful building erected on this Coast during the past five years has duly considered and argued the matter both among themselves and with outsiders. It has been generally considered both impractical and inadvisable to make such an award; firstly, the difficulty of selecting a jury for this purpose is manifest, and, secondly, the bickering, jealousy and selfishness of the aspirants would tend rather to keep them apart than draw them together, and, therefore, abort the prime motive of the League. In selecting the jury, we would undoubtedly choose from among the most noted and successful architects at hand, and these themselves would, in all probability, be aspirants for the award. In general, the big

man, the capable man, the generous man would be without doubt that man who should receive the award, but he, owing to his character and strength, would be the first to vote for a less meritorious aspirant. We hear that the Los Angeles Chapter of the A. I. A. has voted down the same proposition, but our very worthy conferere from Los Angeles, now serving on this committee, has made a very wise suggestion, which we think it advisable to consider at large at this convention, and that is—in place of awarding the prize for the best building, it might be wise to award the prize to the man who has made the most successful efforts in general, not only on one building, but on many. In other words, the attainment of the man should be rewarded, for opportunity builds the building, influence and politics have a great deal to do with the selection of the architect and frequently the biggest buildings are not those that mark the greatest attainments. For this reason, we deem it advisable to accept Mr. Rosenheim's suggestion and with your kind permission, under the head of new business, we shall make a motion to the effect that the architect on the Pacific Coast, being a member of the League, whose performance has been crowned with the greatest artistic success should be awarded the medal of the League, and that a jury of five architects be selected to make the award.

Respectfully submitted,

A. F. ROSENHEIM,
G. B. McDOUGALL,
G. ALBERT LANSBURGH."

Motion was thereupon made to refer the report of the committee to the Executive Council, and upon being duly seconded, was carried.

Work for Students.

The report of Committee on Work for Students was presented by Mr. Bakewell, as follows:

"Mr. President and Gentlemen:

"The Committee on Education and Scholarships reports that at a joint meeting of the two committees held on Monday afternoon, the following recommendations to be presented to your body were adopted: In the first place, the committee discussed the best method of organization of student work. Mr. Gould and Mr. Myers reported that the work in Seattle was in the hands of Architectural Clubs and Mr. Myron Hunt reported the same thing from Los Angeles. Your committee decided that the best method of proceeding would be in conjunction with the Architectural Clubs of each locality, and it was suggested that the San Francisco members of this committee try to organize a class in connection with the Architectural Club of San Francisco.

"Second, it was decided that a central jury of San Francisco men be appointed by this committee, and that they shall pass upon the merit of all work done in connection with the Coast League. The monthly exhibits and judgments to be held in San Francisco by a jury, no voting members of which shall be teachers of the various classes. The second class problems and order problems issued by the Society of Beaux Arts Architect shall be the programs used for the present, the current one being that for the first problem. The date of judgments shall be established later and shall be arranged to fit in with the annual exhibit of the A. L. P. C.

"For the encouragement of the students, the sum of $1000.00 shall be raised by this committee to be used for a first prize or traveling scholarship and other minor prizes or medals as may be determined later."

Motion was thereupon made to refer the report of the committee to the executive council, and upon being duly seconded, was carried.

Sylvain Schnaittacher, for the committee on Plans for the annual exhibition, reported in favor of joining the American Federation of Art and recommended that the individual societies and members comprising the League, be requested to join and to assist in encouraging the objects of the Federation.

Motion was made to refer the report of the committee to the executive council, and upon being duly seconded, was carried.

In Memory of Chas. F. McKim.

John Galen Howard reported for the Committee on Resolutions as follows:

Whereas, in the death of Charles Follen McKim, architecture has suffered a grievous and irreparable loss; therefore be it

Resolved, that the Architectural League of the Pacific Coast now in convention assembled, herewith record its deep sorrow and express its heartfelt sympathy with the bereaved family, professional associates and close personal friends.

"Mr. McKim had for a long time stood acclaimed the dean and pattern of architects, not by reason of his works alone, though these be of the greatest, but for the unswerving fortitude with which he bore aloft the standard of the purest, the highest, the most vital of the ideals of art. He was a great architect, a creative mind, a persistent will, a warm heart. He gave himself to the upbuilding of a noble tradition. His hand, his voice, his purse, were always ready in the great cause. Where he worked, architecture budded and blossomed because of him, whether in stone and mortar, or in the hearts of men quickened to their task by his largess of sympathy and help. His place among the Immortals is assured beyond peradventure. His works and his example are our priceless heritage."

A motion was offered to properly engross the foregoing resolution on the minutes of the meeting and forward a copy of the same to the family of the deceased, also to members of his firm, to the different architectural journals, to the American Institute of Architects and to other architectural clubs or institutes. The resolutions were adopted by a rising vote.

Closing Session.

After recess Mr. Polk, upon calling the convention to order, announced that following the meeting there would be an exhibition of drawings and an address by Mr. John G. Howard, after which the visiting members would be given an automobile ride around Berkeley.

The report of the Committee on Nominations was next in order. The Secretary was directed to cast a ballot for the respective candidates, which action also carried with it the holding of the next convention in Los Angeles.

President-Elect Rosenheim, upon taking the chair, addressed the convention as follows:

"Gentlemen of the Convention: I am so moved by this manifestation of confidence that I am utterly at a loss for words with which adequately to express my appreciation of the honor you have bestowed by electing me your President. But I will serve you with notice that, in my judgment, you have made a serious mistake, when I observe here how much excellent timber you have to choose from. I am sorely conscious

of my shortcomings, but if you really have faith in my ability to steer the ship of state in the right channel, to enable me to do so, it will devolve upon you to lend your earnest co-operation in order to render this organization as effective and as influential as we could wish to have it. You have my assurance at all times that I will do my share of the work, of which there will doubtless be plenty."

Mr. Rosenheim then announced his selection of a standing committee on student work. He said: "You heard the report of that committee this morning, in which it stated that $1000 should be raised, to be used for a first prize, or traveling scholarship, and for other minor prizes or medals. In addition to that, it ought to arrange for an endowment fund. I understand that a subscription has already been started by our retiring President and he suggests that we should not raise less than $1000 annually."

The committee named consists of Messrs. Mullgardt, Rixford, Hunt, Howard, Lawrence, Myers, Gould, Farquahar and Bakewell.

A motion was made, which was duly seconded and carried, that the Architectural League of the Pacific Coast make application for membership in the National body.

Under the head of new business, the committee on award of medal recommended that the matter of giving a medal to the architect making the best exhibit and similarly rewarding the private citizen, corporation or company which does the most for improvement or in a public spirited way, be taken up with the San Francisco League, and a motion was made that this matter be incorporated with the other proposition regarding award of medal.

Motion was made, which was duly seconded and carried, that the Secretary be instructed to communicate with Mr. Brown, Secretary of the American Institute of Architects, notifying him of the existence of the League and requesting that it be placed on the mailing list and exchange list of the Institute; said motion also to include the Beaux Art Society and the Architectural League of America.

Mr. Mullgardt: "Mr. President, before closing this convention, I make a motion that a hearty vote of thanks be tendered to the out-going officers, to the Executive Council and to the various committees who had the exhibition work in charge."

The motion was duly seconded and carried.

There being no further business, on motion the convention adjourned.

* * *

Was Awake, Too

A Chinaman who just came over to the new land started a little laundry.

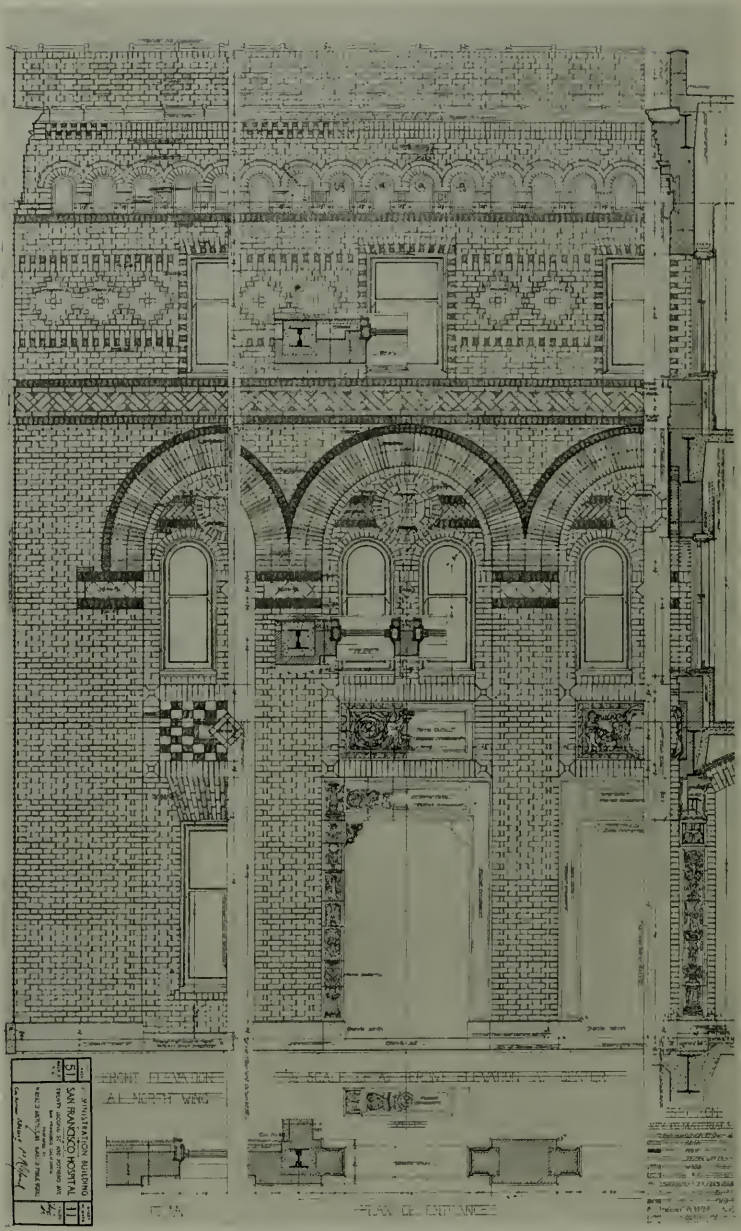
On one side of him was a hotel with the sign outside: "We Never Close." On the other side was a restaurant with this sign: "Open All Night."

The Chinaman, thinking he must have a sign, too, tacked up a little board with these words on:

"Me Wakee Too."

* * *

"I've got a good story to tell you. I don't think I ever told it to you before." " Is it really funny?" "Yes, indeed it is." "Then you haven't told it to me before."—Lippincott's Magazine.



Details San Francisco City and County Hospital
Newton J. Tharp, Deceased, City Architect

House of Mr. G. W. Wattles, Hollywood, Cal.
Myron Hunt and Elmer Grey, Architects

A Review of the San Francisco Architectural Club's Exhibition*

By AUGUST G. HEADMAN, President of the Club

A GENTLEMAN from London who visited our last exhibition, held in San Francisco October 18-31, was so inspired with the architectural display that he said he considered it his personal duty to write me these words: "Being architecturally inclined and a lover of art in general, I have taken great interest in your exhibition. It has been my pleasure to visit similar exhibitions in New York, Chicago, London and Paris; but while the display of architectural talent has been on a much larger scale in the above mentioned cities, I am pleased to concede that in assembly, completeness of detail, artistic and harmonious arrangement of material, your exhibition is equal if not superior to any I have seen."

How gratifying it is to receive such a letter and to know that we have not worked in vain. Our attendance for the two weeks reached the 12,000 mark by actual count, and when we consider the apparent lack of interest which is generally displayed by the public for affairs of this nature, the figures just quoted seem wonderful and, indeed, most encouraging to us, who find it difficult and practically impossible to educate the public to things artistic. However, we could see spirit, enthusiasm and appreciation in every visitor, especially so when a few would gather about a favored design.

For example, Mr. Louis P. Mullgardt's rendering of the Taylor home was a gem in architectural composition, color and atmosphere, worthy enough to hang in any art gallery. The house at Greenwich, by Kirby, Petit & Green, attracted much attention, which such a worthy design rightfully deserved. It is regretted that this delightful creation did not appear in the Year Book, as the architectural composition is charming and the

*Many of the illustrations accompanying this article are taken from the Year Book of the San Francisco Architectural Club, which was published in connection with the annual exhibition.

Bank of California, San Francisco — *Bliss & Faville, Architects.*

rendering even more so. Charles A. Platt, William Knowles, Lawrence Buck, Elmer Gray and Myron Hunt are to be complimented on their charming homes, all so expressive of their authors, as is Wilson Eyre, forever known for his original rendering and splendid compositions. What a great consolation it must be to one to know that his work can be so distinctive from his fellow men and still be successful! Cass Gilbert's West street office building, a structure of true expression and noble proportion, charmed many. D. H. Burnham and Co., Willis Polk, designer, exhibited many interesting suggestions. For example, the People's Gas Company's building, from the Chicago office, is a masterly rendering, exceptionally well handled. We can learn much from this building. Frederick H. Meyer's structures always attract attention. His competitive design of the Union Trust building was greatly admired, likewise the Kohler & Chase structure, a practical building of pleasing lires.

An office building by Mr. A. Warren Gould was delightful in its simplicity and showed much thought and study. Dickey & Reed's design of the Oakland City Hall was entirely different from the stereotyped city hall designs, being good in its proportions and possessing many excellent motives. Howells & Stokes exhibited among other things a design for a municipal office building for New York city, an inspiring composition some thirty-six stories high. Bakewell & Brown's Berkeley Courthouse transports a French hotel de ville into our midst. It is a charming design, and the pencil rendering shows the masterly hand of its author.

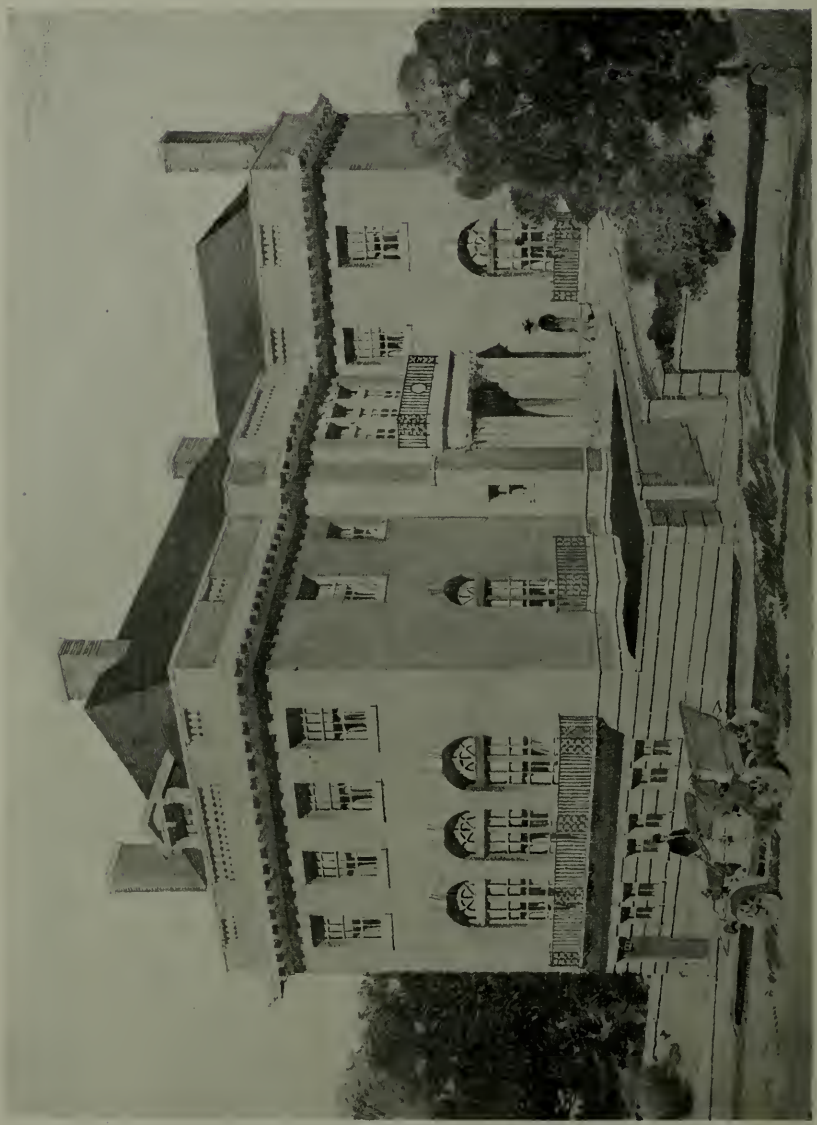
The Phelan and Head office buildings, by William Curlett & Son, hold their own in any company. The renderings, which make beautiful and clear reproduction, are by Berdett Long. Two designs by Sutton & Weeks and one by Louis P. Hobart, to wit, the White Investment Company's building, shows us another step toward the improvement of office building architecture in San Francisco. MacDonald & Applegarth's Heineman office building is a wonderful conception on a small lot, and entirely successful.

The Columbia Theater, by Bliss & Faville, a well studied and an expressive facade, is splendidly executed in color. The design is worthy and inspiring and a big step in the right direction. City Architect Loring P. Rixford's designs show what improvements have been made in the city municipal work, and Mr. Cahill exhibited a very logical and well studied scheme to improve the present City Hall site and its surroundings.

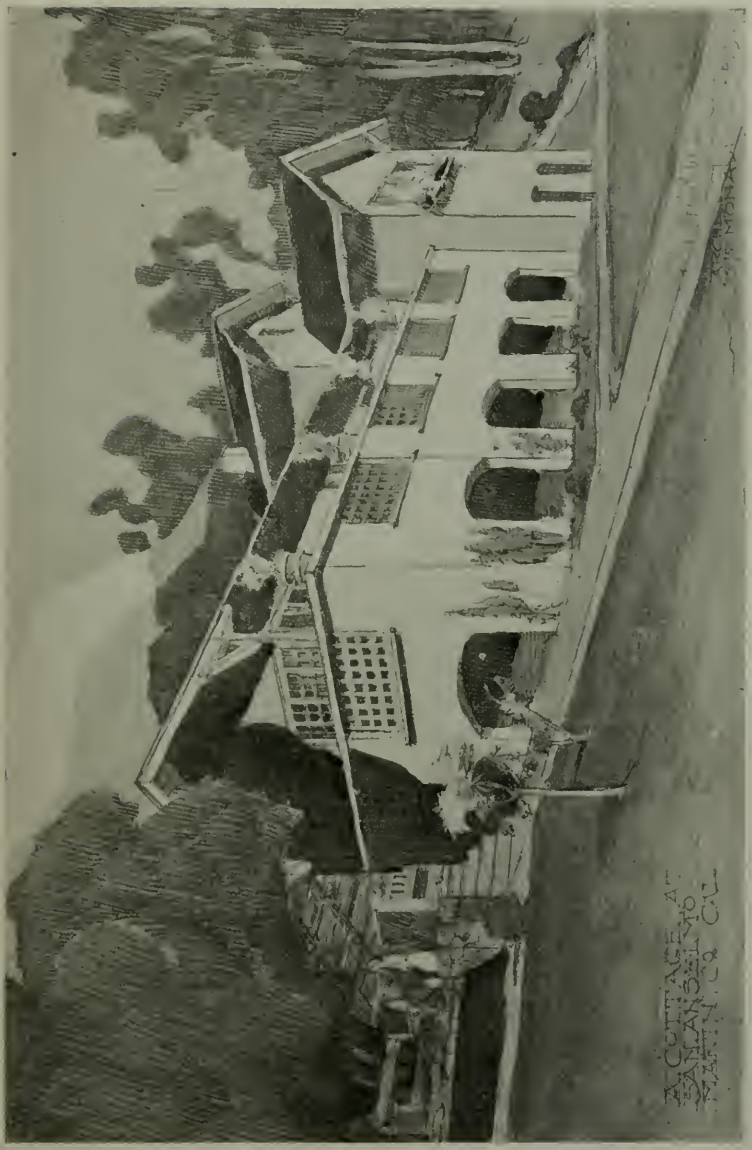
In the line of clubhouses Bakewell & Brown, B. R. Maybeck, Walter H. Parker, George W. Kelham, Loring P. Rixford, Crim & Scott, Valare De Mari and others exhibited some very interesting and expressive designs of social life. George B. Post & Son of New York city are to be congratulated for sending us an original drawing of the interior of the Wisconsin State Capitol, and not photographs, as most of our Eastern colleagues favored us with. A. D. Nicholson's measured drawing of the Santa Croce in Rome, exhibits much time and thought and was appreciated by those who have attempted such work.

The design for the new Grace Cathedral, by Cecil G. Hare of London and L. P. Hobart, associated architects, created considerable attention, it being designed in England, the home of Gothic, and presents a good occasion to compare it with examples of other Gothic work done in America, such as the ecclesiastical designs by Cram, Goodhue and Ferguson; an Episcopal Cathedral, by E. H. Hildebrand and A. D. Nicholson.

The ever increasing influence at work for good architecture was clearly demonstrated by our architectural schools in the work presented by the University of California, Massachusetts Institute of Technology and the University of Pennsylvania.



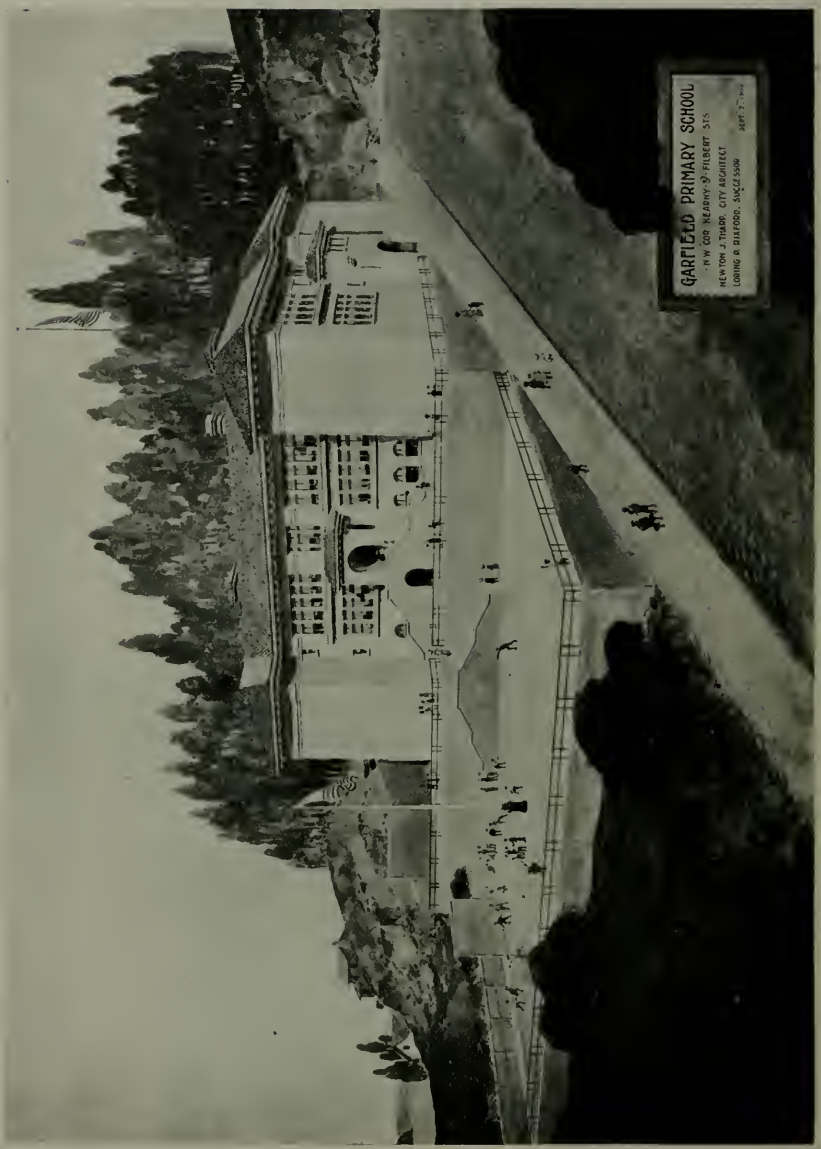
Residence of Mr. Alexander Heynemann, San Francisco *Houghton Sawyer, Architect*



Hillside House at San Anselmo, Cal. W. Garden Mitchell, Architect

Residence for Mr. Robert C. Gillis, Santa Monica, Cal.
Myron Hunt and Elmer Grey, Architects

Residence for Mr. and Mrs. Louis Stern, Fair Oaks, Cal. *Houghton Sawyer, Architect*


GARFIELD PRIMARY SCHOOL
N.W. COR. KEARNY & FILBERT STS.
NEWTON J. TharP, CITY ARCHITECT
LORING P. RIXFORD, SUCCESSOR
SEPT. 7TH 1911

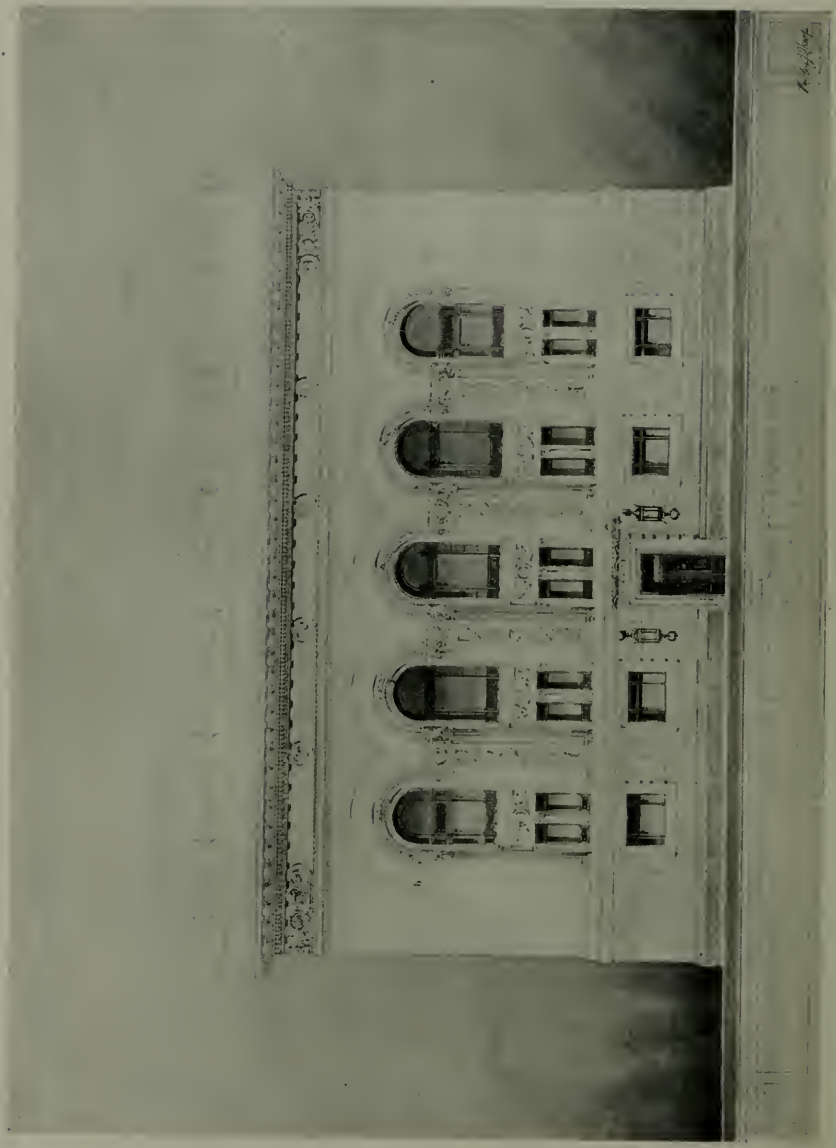
Garfield Primary School, San Francisco

Portola Primary School, San Francisco
Newton J. Tharp, Deceased, City Architect

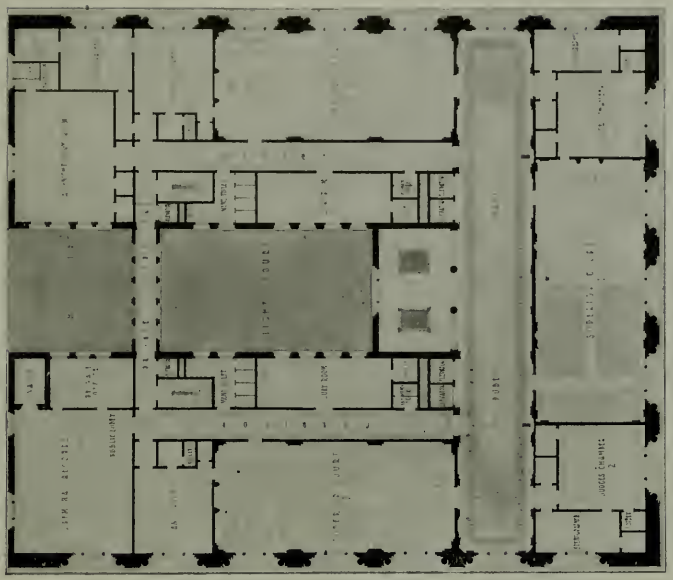
Holly Park Primary School, San Francisco

The University of California Library, Berkeley, Cal. *John Galen Howard, Architect*

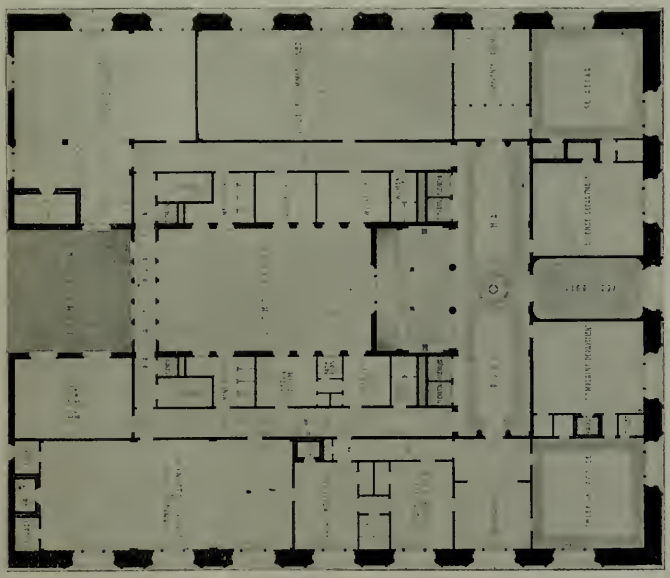
Mills College Gymnasium, Oakland, Cal. *Morgan & Hoover, Architects*



Hall of Justice, San Francisco. Newton J. Tharp, Deceased, City Architect

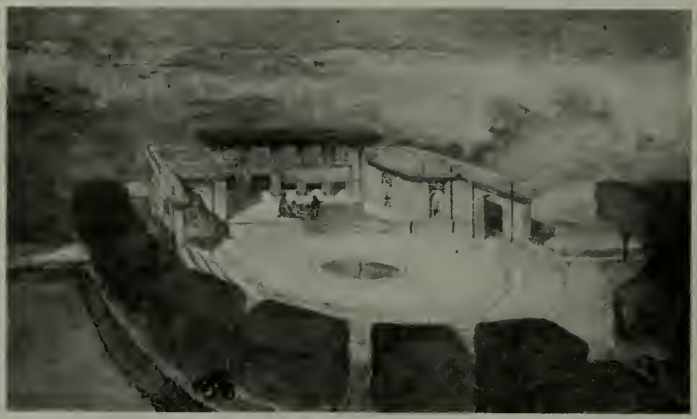


Third Floor Plan.



First Floor Plan

Hall of Justice, San Francisco



Perspective of Open Air Theater for Mr. Truxton Beale, Bakersfield, Cal. Louis P. Hobart, Architect

Detail of Colonnade, Open Air Theater for Mr. Truxton Beale.

Detail of Entrance, Open Air Theater for Mr. Truxton Beale

Mr. Disi's interior designs were all splendid in their technique, color, design and presentation. We should compliment ourselves on having with us in this city of San Francisco a man of Mr. Disi's ability. Haig Patigan's "Ancient History" certainly deserved a place of honor, and it is to be regretted that other sculptors did not join with us in this exhibition. Mr. Calder of Los Angeles exhibited some interesting sculpture. Mr. Isador Conti's sculpture of a festival frieze was an improvement on Donodatolo's dancing and singing girls, from which it is quite evident he was inspired. In the line of the allied arts The Enos Company, Bauer Fixture Company, Harry Hopps, J. E. Mackay and many others exhibited splendid examples of their art. As to furniture, Sloane, the City of Paris, Baumgarten and others added their artistic effects to relieve the monotonous number of pictures. Sarsi's garden seats were delightful, and Manetta's model of the St. Francis showed exceptional skill for which this clever modeler is noted. It wouldn't be doing the exhibition justice unless we congratulated Paul Elder for his beautiful display of book plates and likewise we must mention Mr. A. R. Widdowson, who represents the Bromsgroove Gild of England, who displayed among other things the statuette of Jeanne d'Arc, an especially interesting, clean-cut and well modeled conception.

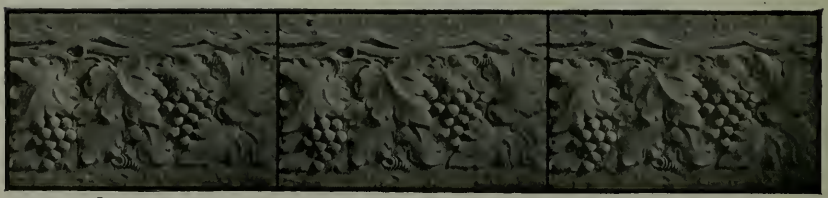
The attendance at the exhibition and the interest taken in the same by every one tends to show that the local public is reaching a more appreciative stage toward art and architecture. The comparison of the local work with the eastern more than demonstrates that we have as good talent along our shores as on the eastern coast; so with a keener appreciation of good art and architecture by the general public, with its willingness to sacrifice some commercialism to its noble cause, San Francisco bids fair to become the center of a pure, original architecture expressive of her people as well as the great metropolis of our country.

Ship Panel

The Origin and Development of Architectural Faience and Tiles

By FRANCIS G. PLANT*

AMONG the materials being used today for the decoration of architecture of all kinds there is nothing that offers so many possibilities for variety and permanently beautiful effects as the use of glazed faience and tiles. To most people glazed tiles are somewhat familiar objects, but to them the word "faience" is a conundrum. Perhaps a little explanation of both words will help my readers to more clearly follow this article. In simple language, a glazed tile is a slice of terra cotta (or burnt clay) with its face coated with glaze (or liquid glass). Faience is the same material put into more elaborate form, and the growth from the one to the other dates back to the early ages. At first men fashioned objects of coarse, raw clay and crude in form. These were hardened by drying in the sun. They then took to decorating them with scratched lines. The next development was to harden these objects by baking, and from then the next stage was to make the work more permanent by coating it with a thin glaze which they made from such materials as they were acquainted with at the time. From then on throughout the long ages the work developed, and although there have been various accounts of the making of tiles at very early periods, some of them dating as far back as 5000 B. C., it is generally accepted that the Egyptians first used them to any great extent about 1400 B. C. They then employed them in decoration, but the next step was to make them thicker in the form of glazed bricks, and with these they built and decorated many of their palaces and tombs. The Persians acquired the industry from the Egyptians



Grape Vine Panel

*Art Director the Hartford Faience Company.

and produced some marvelous examples of colored glazes that have never since been excelled.

From the Persians the work was taken up by the Arabs, and this wild race of people proved by their masterly handling of the material that art was a part of their nature. The invasion of the Spanish Peninsula by the Arabs in 1711 A. D. marked the entry of the industry into Spain and it was extensively practiced there. The famous Alhambra was commenced in the year 1272 A. D. and the tiles that decorate it are among the most beautiful that have ever been produced in any age.

During all these periods there were various attempts to develop burnt and glazed clay in the direction of differently shaped pieces for architectural construction and decoration, but it was not until the fifteenth century that any great note was struck in this direction. About that time it was extensively produced by Italian workers and factories were established at Faenza and in the surrounding neighborhood. The most brilliant of these workers were the Della Robbias, and this family manufactured various objects in burnt and glazed clay for the decoration of buildings. It was at this time that the word "faience" came into general use, presumably from the fact that the material used in the Della Robbia productions were similar to what had been used before at Faenza.

The Owl

To fully describe the work of the Della Robbias would take considerable time and space, but their genius was so great and gained such fame that any writing on tile and faience would be incomplete without a brief description of what they did. The senior and most famous Della Robbia was Luca, who was born at Firenze about the year 1400 A. D. Before he adopted faience as a means of carrying out his ideas he executed marvelous work in carved marble and moulded bronze. He first employed faience about the year 1440 A. D. and his first finished work was a tabernacle for the Chapel of St. Luke in the Hospital of Santa Maria Nuova, Florence. Some of his most important works are to be found in the little village of Impruneta, six miles from Florence. There is kept the wonderful image of the Virgin which in times of pestilence or calamity it was customary to carry in procession to Florence. Luca's works in glazed faience have technical qualities which have never been surpassed. In the first place, he used a clay that was well selected, washed and freed from all impurities; secondly, he employed glazes which were pure and beautiful in color, and predominant among these was a magnificent pale blue and a creamy white; thirdly, his works had the glaze evenly distributed over the whole surface and so preserved the beauty of his modeling; fourthly, he was extremely careful in the jointing of different pieces and he always fitted them together and eliminated all ragged edges and coarse joints. The next Della Robbia of note was Andrea, Luca's nephew, who was born in the year 1435. During his early years he was assistant to his uncle, Luca, and although

The Duck Panel

Wall Fountain.

South Ferry Panel.

Conservatory Seat and Floor.

Charter Oak Mantel.

he was strongly influenced by his uncle he was no imitator, but a conscientious artist who in the expression of art followed lines of his own. His best works are those where he employed the figure of the Virgin, kneeling figures, children and cherubs' heads. In Andrea's later years the decline of the Della Robbia faience began. He employed many assistants who repeated his designs and often executed slovenly work of the poorest quality. In place of the fine, flawless glaze of Luca these assistants drifted to glazes of poor quality which contained coarse specks of grit, bubbles and flaws. The degradation of the

Faience Mantel, "The Sun Worshipers"

Della Robbia art was complete when one of Andrea's sons, Giovanni, commenced to supply a popular commercial demand for reproductions of his father's work. Further than this, he commenced a series of imitation loud in color, and by the time he had ceased these imitations he had drifted to crude work, and his lack of sincerity led him at a later period to substitute oil paint for glaze. His one object seems to have been to obtain striking effects with as little genuine labor as possible. In spite of all these failings he at times

produced works which proved that, if he had used it rightly, he had some of the fine ability possessed by Andrea and Luca. Giovanni died in the year 1529 A. D. and, except for a younger brother, Girolano, who spent most of his time working in France, the actual connection of the Della Robbias with faience ends. From that time onward the word faience seems to have always been employed when describing architectural objects of clay, burnt and glazed. The various periods of the use of faience and tiles from the time of the Della Robbias until the present has been marked with many changes, but all the time the industry has been actively practiced in nearly all European countries, particularly England, France, Holland and Germany.

In various parts of these countries there are magnificent buildings which are standing illustrations of the possibilities of the material, and after its varied journey throughout the many ages it seems at the present time that the manufacture of high-class faience and tiles is about to enjoy the success it so richly deserves. Such great firms as the Doultons of England have already achieved world-wide renown in its production, and it is probably due to them and other famous European firms that the manufacture of the material was introduced to this country. Many of the leading men in the industry here to-day received their earlier training abroad.

Tiles were first manufactured here about thirty-three years ago, but faience was not commenced till about 1890. At first it was hardly appreciated, or if appreciated was little encouraged. As time went on, however, owing to the enthusiasm and tenacity of the one or two firms engaged on the work, it began to take hold, and so it has grown until at the present time it is a thriving business. Foremost among these pioneers should be mentioned the name of the Hartford Faience Company. From the commencement of the industry here they have fought the various problems and endeavored to produce something which was worthy to rank with older exponents abroad. That they have been successful in no small measure is proved by their being awarded at the St. Louis Exposition the gold medal for a faience mantel about 10 feet 6 inches by 10 feet 6 inches, entitled "The Sun Worshipers" and executed in the Della Robbian style. This work was pronounced by expert critics to be the most ambitious piece of faience ever executed in this country.

In addition to the decorative value of faience and tile it has been conclusively proved that it possesses better fireproof and sanitary qualities than any other building material except the hard stones such as marble and granite which are considerably more expensive, and even these are not perfect. Brick and unglazed terra cotta get filthy in time, marble requires repolishing, granite endures, but unless it be polished soon becomes grimy; but faience owing to its glazed surface and color, loses little brilliancy, however severe the climate may be. Then it has another virtue: besides being easily cleaned and brightened by rain it also, owing to its coating of glaze, protects the walls of a building from dampness.

After a very heavy rainstorm a brick or concrete wall has an immense amount of water to be vaporized before it can become dry and warm, and the weight of this water is considerable. Good faience and tile work is absolutely permanent, and there is no better testimony of this than the magnificent examples of Egyptian and Italian work that to-day are almost as perfect as when they were produced. In America perhaps more than any other country in the world, "More beauty in our buildings!" seems to be the cry, and, fortunately, the architects are realizing that with the possibilities of faience and tile they can combine strength of construction with beauty of form and color. There is no reason why, given proper study in design and manufacture, results cannot be obtained to equal those of the old masters. With the exception of more scientific machinery in the preparation and mixing

of the clay and glazes, the work is made and fired to-day just as it was done by the ancients, and the following is a brief description of the manufacture of a piece of faience or tile from the raw clay to the finished state:

Different clays are dug from the earth and dried, ground and mixed together with sand, flint or feldspar. The mixture is then sieved and stirred with water to form a plastic clay which is called the "body." This clay is then pressed into moulds or worked with the hands to form the desired shape, which is then dried slowly until it becomes what is known as "white hard." It is then put into a kiln or oven and baked at white heat for about fifty hours. The kiln is allowed to cool, and the material taken from it is known as "bisque." This bisque is then coated with glaze or liquid glass which at this stage is in a form similar to thick cream. If the work has an elaborate design on it or is otherwise of a high class the glaze is applied by an artist.

As soon as the glaze paste is dry the work is put into another kiln and baked again about another fifty hours. This second baking causes the properties in the glaze to melt or "flux" together and so forms a thin coating of glass wherever it is applied. The work when taken from this kiln is like colored stone with about one-sixteenth of an inch of glaze on the face of it, and this glaze may be either bright surface or "matt" like the grain of an eggshell. This is the finished stage, and the material is then ready to be set on the building. It may be either in large blocks for constructional purposes or flat, as tiles or panels, for decoration of stone, brick or concrete buildings. One of the most important points in connection with the work is the magnificent range of color which can be had. Hitherto the cry against color on our buildings has been because it was claimed that there was too much smoke and dirt and the color would soon be lost. We are getting over the fallacy, however, and the more eminent of our architects are fearlessly using color and yet exercising the proper amount of restraint to avoid vulgarity. This courage is giving to us such beautiful buildings as the Brooklyn Academy of Music and Dr. Parkhurst's church, and there are more to come.

Tree and Mountain Panel

Unique Reinforced Concrete Bridge*

By EDWARD L. MAYBERRY, C. E.†

Spanning the Arroyo Seco, at the west end of Colorado street in Pasadena, Cal., is a new reinforced concrete bridge that is both novel and interesting, and one that marks a change in the conception and use of this material for bridge work. The prevailing idea of the use of concrete for bridge building has been that of low, short girder spans or some form of arch construction. Although there is no better construction than the latter type, it is expensive, especially for long and high spans, and on account of its high initial cost, cheaper materials are frequently employed.

THE site of the Linda Vista bridge was an ideal one for the arch form of construction, but cost was the main factor in deciding what type would be used. The engineers had the problem of designing a bridge in accordance with certain specifications and a limited amount of money. Knowing that the viaduct type, long girders carried by towers, would be the cheapest form to use in steel construction, it was decided to investigate this type for a reinforced concrete structure, even though it had never been used before for a highway bridge. There are two instances where viaducts of a somewhat similar design have been built. One is a railway viaduct erected in 1907 for the Richmond & Chesapeake Bay Railway Company, in Virginia, and the other a highway bridge across Sligo Branch in Takoma Park, Indiana, built this year. Whereas, the first is a reinforced concrete viaduct, the second cannot strictly be classed as such, for structural steel girders and column struts were used in its design.

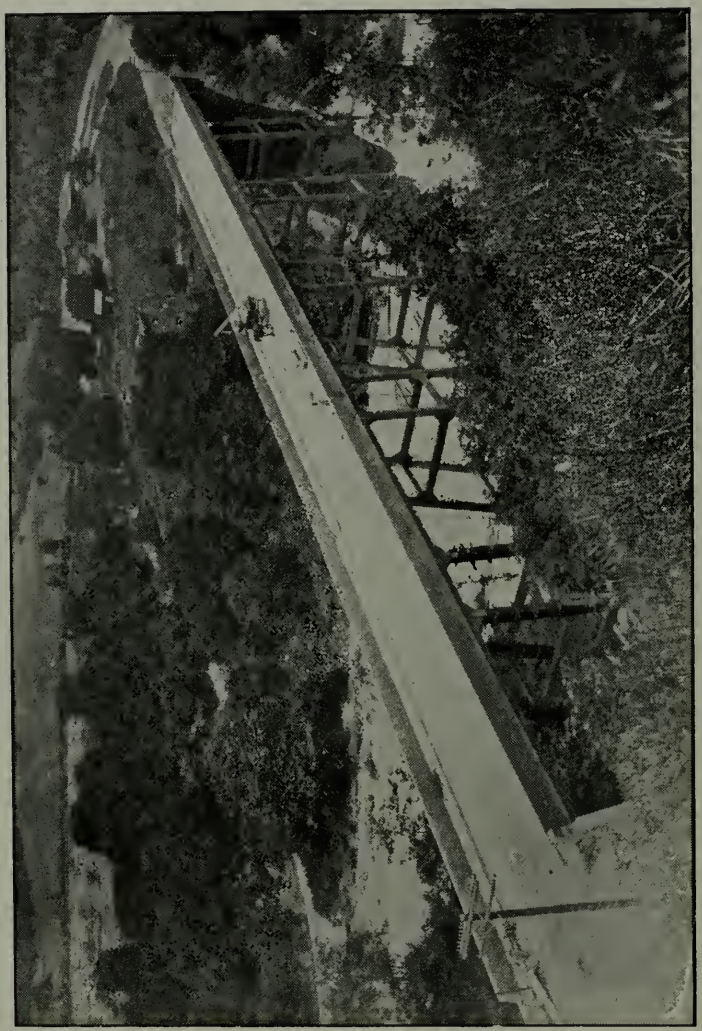
The general specifications for this bridge called for a structure 400 feet long with a twenty foot roadway designed to carry a twenty-ton roller, and at an elevation four feet higher than the former bridge, or some 65 feet above the bed of the river. After a careful study of the bridge site and trying several schemes, the viaduct type of construction was adopted, using five tower and six girder spans. This arrangement spanned the active bed of the stream best and gave a uniform panel spacing of 17′-3″ throughout the length of the bridge, using one panel to each tower bent and three panels for each girder span. They then had girders 51′-9″ long supported by towers 17′-3″x20′-0″ at the top, the tower columns having a batter of one in ten, in the transverse direction of the bridge.

There had existed and been in use for some twenty years an old wooden structure consisting of two truss spans of about 130 feet each with trestle approaches at each end. On account of the great height of this bridge and the necessary high cost of scaffolding to support the reinforced concrete structure during its construction, the engineers planned to use this old wooden bridge, temporarily strengthening the same where necessary, for a working platform and staging to erect and help carry the new structure. In order to utilize the old bridge, the engineers made their design so that the new structure would straddle the old trusses and the final plans gave a twenty-foot clear roadway between curbs, with four foot sidewalks on each side.

Although the Arroyo Seco, as its name implies, is a dry stream nine months in the year, during the rainy season, there are periods when a large volume of water, at times six feet deep with considerable velocity,

*Illustrations by courtesy of the Southwest Contractor and Manufacturer.

†Member of the firm of Mayberry & Parker, Architectural Engineers, Pacific Electric Building, Los Angeles.



Linda Vista Reinforced Concrete Bridge, Pasadena, Cal.
Mayberry & Parker, Engineers

has to be taken care of. A reinforced concrete bridge is one that is built for all time, and so it was necessary to carry the foundations of this bridge deep enough to preclude the possibility of a remote chance of their being undermined. In view of the fact that this stream carries but little drift, it was feasible to use isolated pier footings under these towers. These footings extended from a level of some eight feet above the lowest point in the river bed to from ten to sixteen feet below this point. They are six feet square at the bottom and three feet square on top, there being four to each tower or one for each column.

On excavating for these footings considerable water was encountered, being the underflow of the stream, and on two of the central towers the contractors were obliged to pump day and night to keep down the water level. Even then it was not possible to entirely pump the crib dry with the available plant, and it became necessary to deposit concrete under water. This was done with a tremie, or long tube with a hopper at the upper end, that permits of placing the concrete in mass on the bottom of the excavation without the aggregate being separated and the cement washed out by passing through the water. The work of putting in these pier footings was pushed rapidly and concrete deposited continuously in order to get above the water level, and was perfectly successful. All of the footings for the three central towers were completed before any of the superstructure was commenced, as the winter season was at hand and the contractors were anxious to get above high water with the work as soon as possible. As intimated, the towers consisted of four columns each. These columns are eighteen inches square and reinforced with 8-1¼″ round steel bars extending into the pier footings to within one foot of their base. Nearly all of the columns are over fifty feet long and have longitudinal and transverse struts framing into their third points to stiffen them. The struts vary in size from 10″x18″ to 12″x24″ and are reinforced with 4-⅞″ or 4-1″ twisted steel bars laced as a column. Large corbels on two sides of the struts reinforced with 2-¾″ twisted steel bars form knee braces and materially aid in producing a rigid connection.

The deck consists of a reinforced concrete slab, longitudinal stringers, transverse deck beams and girders. The stringers are 17′-3″ long and 6′-0″ on centers with a cross section of 7″x19½″ and reinforced with four 1″ twisted steel bars. The deck beams between the large girders have a cross section of 10″x25½″ and are reinforced with 6-1⅛″ twisted steel bars. In the tower spans these transverse beams were increased to 12″x30″ to add lateral stiffness. The large girders 51′-9″ long, extending from tower to tower have a cross section of 16″x58½″ and are reinforced with 9-1⅜″ twisted steel bars in tension and 3-1⅜″ round steel bars in compression. In the tower bend the longitudinal girders are the same size as the fifty foot girders and are reinforced with 4-1″ twisted steel bars. Corbels were used on the longitudinal girders and shear bars and stirrups were provided to care for all stresses. The sidewalk is carried by small cantilever beams or brackets at every panel point, on the outside of the large girders. The rail is a 4″ reinforced concrete slab designed as a cantilever. The truss form of reinforcement, that is, bending up a part of the tension steel over the supports to care for the reverse stresses obtained at those points was used throughout.

Owing to the length of this bridge it was necessary to provide joints to take care of the expansion and contraction that takes place in the concrete due to changes in temperature, and the structure, therefore, is cut

Linda Vista Bridge, Looking Up Stream
Mayberry & Parker, Engineers

Showing Depth of Girders *Forms and Reinforcement in Place for Roadway*

Linda Vista Bridge, Pasadena, Cal.

entirely into at two points. The expansion joints are on the outer ends of the portion consisting of the three central towers with their two connecting girder spans, and can be seen by a close inspection of the accompanying photograph. This facilitated construction, also, as it enabled the contractor to erect and complete this central portion of the bridge, remove a portion of the forms from the same and use them in turn on the west and east sections, which consist of a single tower and two girder spans.

The whole structure was given a pebble dash finish of cement on the outside and the sidewalks were trowelled smooth and blocked off. An eight inch cement curb, with angle guard, separates the roadway from the sidewalks and galvanized iron conduits are set in this curb at stated intervals, so as to effectively drain both. The roadway was given a two inch asphalt wearing surface.

It will readily be seen from the above and from a study of the photographs reproduced here that no attempt at ornament has been made in the design of this structure and that art was sacrificed to utility in order to eliminate extra cost. Nevertheless the bridge as completed presents a very pleasing aspect and is beautiful in its very simplicity reflecting considerable credit upon the designing engineers for the good proportions maintained in the design and upon the contractors for the excellence of their work.

Although this bridge was designed for a twenty-ton roller, there was none available when it came time to make the required test. The heaviest roller obtainable weighed fourteen tons. This roller was run across the bridge several times in order to thoroughly test all parts of the structure. Observations were made as to the amount of deflection on each of the big girders on both sides of the bridge, the roller being brought to a stop at the center of each girder and readings taken. The maximum deflection in any girder was only $^1/_{1200}$ of the span, which was more than satisfactory to all parties interested and demonstrated that the structure is perfectly able to carry a much heavier load than the twenty-ton roller, for which it was designed, with absolute safety.

This test was a very severe one upon the deck slab in view of the fact that with the twenty-ton roller, under specified loading, there would have been an uniformly distributed load over seven feet of 3800 pounds per transverse foot on this slab, whereas the fourteen-ton roller had rear wheels only 20 inches wide, giving a load of 9,500 pounds concentrated on twenty inches or 5,700 pounds per transverse foot of roller. This will be further emphasized when it is stated that a concentrated load produces double the effect of an uniformly distributed load and comparing the loads given above, it will be seen that this test was nearly three times the load for which this slab was designed. There was no evidence or indication of possible overstress at any time during the test, which was witnessed by and made under the supervision of the County of Los Angeles, represented by its County Surveyor, Mr. Noble; the City of Pasadena, represented by the acting Mayor, Mr. Hotaling and its City Engineer, Mr. Van Ornum; the designing and supervising engineers, Mayberry & Parker, of Los Angeles, the contractors, the J. F. Hall-Martin Construction Company of Los Angeles and others.

In conclusion it might be well to say that a competing design for this bridge was submitted and consisted of a steel viaduct some twenty feet shorter, with wooden floor, joist, deck and rail. Bids were called for on both plans and the lowest bid for the reinforced concrete structure was only $3,700 more than the lowest bid for the wood and steel bridge. The reinforced concrete bridge is, of course, a permanent structure with prac-

tically no cost of maintenance and was designed to carry a load 50 per cent greater than the wood and steel bridge. The total cost of this bridge, including engineering and inspection fee, was $22,054.67 and, when its length and height are kept in mind, is a fine showing for a reinforced concrete bridge, being only $1.95 per surface foot of road-way and sidewalk.

* * *

Is Concrete Good for Everything?

ABOUT everything except wearing apparel and table utensils is now made of reinforced concrete. The use of this material has taken on the qualities and dimensions of a fad—one of those accesses of temporary mania to which the great American public is subject. Sometimes it is roller skating, sometimes bicycling; just now it appears to be concrete. Without prejudice to the undoubted advantages of this compound as a building material it may be foretold that some few objects made of other substances will remain to us. In the last few years the enthusiasts have begun to build highway bridges of reinforced concrete floor slabs on account of their permanence, rigidity and steadiness. Apparently some of the designers forgot that with these advantages goes increased weight, and the road builders, coming after them, have made the matter worse by loading these structures with macadam. Result—collapse. Within three months two new bridges have given way from this cause, one of which was not quite completed. In one case the contractor, wishing to give good measure, made his floor eight inches thick instead of six, so that when the bridge was turned over to the authorities it was already overloaded by 25 pounds to the square foot. Then the road gang, who appear to have been equally lavish and generous, built up the macadam 12 inches thick at the crown, whereas the plan called for a uniform three inch layer. This added 40 pounds overweight a square foot, a total of 65. As the total provision for "live load" was only 100 pounds to the square foot it is not to be wondered at that the first heavy load brought the bridge down. English engineers charge that the Americans do not know how to build large bridges safely.—Chronicle.

* * *

San Francisco Temporary Buildings Must Come Down

INSPECTORS from the San Francisco Board of Public Works are having a busy and somewhat exciting time visiting the owners of properties in a very large district in San Francisco upon which temporary buildings were erected immediately after the fire of 1906, on permits issued by the then mayor of San Francisco. It seems that no one knows how many buildings are affected by the order of the supervisors that they shall all be demolished or removed on or before May 1, 1910. No record was kept of them. The permit to put up temporary buildings was a measure of expediency to meet an emergency.

Buildings that must be removed were erected in the following streets: East, Steuart, Spear, Main, Beale, Fremont, Drumm, Davis, Front, Battery, Sansome, Montgomery, Kearny, Grant avenue and Dupont, Stockton, Powell, Mason, Jones, Leavenworth, Hyde, Larkin, Polk, Van Ness avenue, Market, Mission, Grove, Fulton, McAllister, Golden Gate avenue, Turk, Eddy, Ellis, O'Farrell, Geary, Post, Sutter, Bush, Pine, California, Sacramento, Clay, Washington, Jackson, Pacific avenue, Commercial, Vallejo, Green, Union, Filbert and Greenwich. Also a number on Franklin and Gough streets.

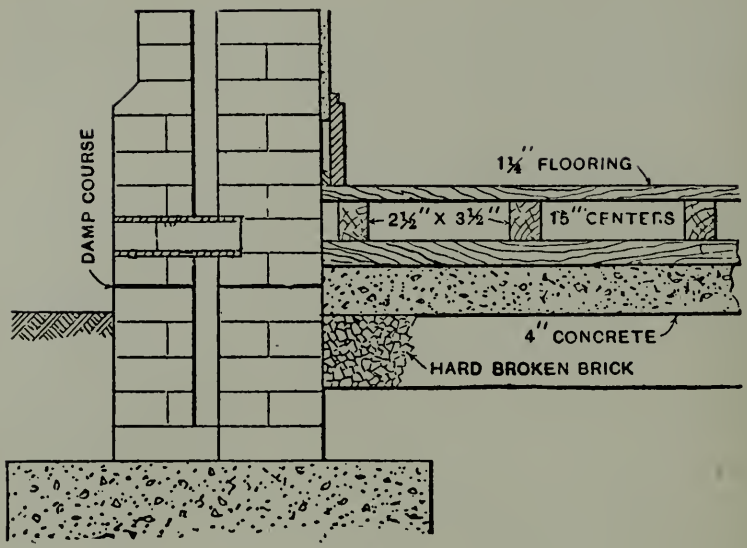


Fig. 1

How to Lay Wood Floors on Concrete Bases

THERE are today in connection with building construction many conditions which call for a concrete floor with a wood finish, as it might be termed; that is, a wood floor laid upon a concrete bed. There are several ways of constructing such a floor, and a London writer gives some valuable information that will come handy to most builders. Floors constructed as here shown are capable of carrying heavy loads with great economy of timber as regards the size of joist to be used.

In the methods described any of the usual joints may be adopted instead of rebated and filleted flooring, while if hardwood is the material the spacing of the joists must be altered to agree with the holes bored for the nails, for hardwood flooring is generally supplied already bored for secret nailing, the holes being at regular intervals.

The following is a description of the floor illustrated in Figs. 1 and 2, the latter being a longitudinal section of the floor shown in the first illustration: Excavate over the area of the building as may be required; then level and prepare the surface and provide and lay hard broken brick rubbish 6 inches thick, free from dirt, chips, shavings and organic matter, to be thoroughly rammed and left even and level on the surface. If a good hard bottom is found upon excavation the broken brick may be dispensed with. Upon this filling provide and lay Portland cement concrete, 4 inches thick, composed of 1 part of cement to 5 parts of clean gravel, shingle or broken stone, ¾ inch gauge, containing just sufficient sand to fill up the interstices, level and tamp until water is brought to the surface, which should be then floated.

The sleeper plates should be of fir, free from defects of every kind, 2 inches by 3 inches, bedded evenly on the layer of concrete referred to above at intervals of 3 feet 6 inches center to center. The joists should be of fir 2½ inches by 3 inches, spaced 1 foot 3 inches, center to center and securely fixed to plates by two 2½ inch wrought iron nails at each support.

The flooring should be in 4½ inch widths, 1¼ inches thick, laid with rebated and filleted joints with splayed headings. Fillets should be

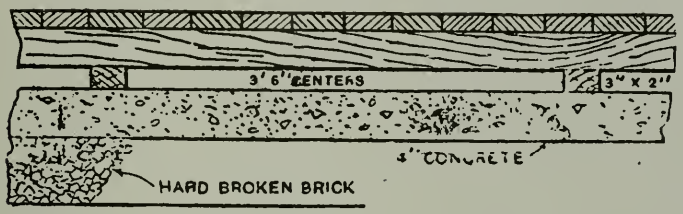


Fig. 2

⅜ inch by 1 inch, and should be painted one coat before being laid. The flooring boards should be secured with cut flooring brads, two to each joist, weighing 20 pounds per 1000. The edges and rebates of the boards should have a thick coat of white lead paint applied when being laid and before being cramped up.

Provide and build in, in concrete, at intervals of about 6 feet, strong cast iron galvanized gratings 9 inches by 3 inches, with a galvanized cast iron sleeve 9 inches by 3 inches, built in behind the air grating through the wall cavity.

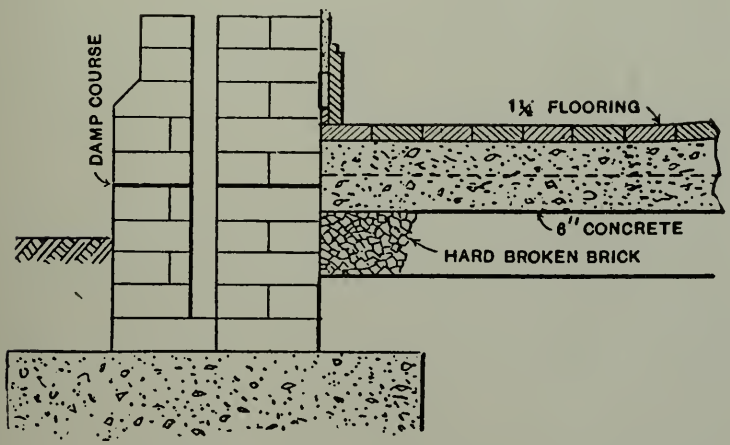


Fig. 3

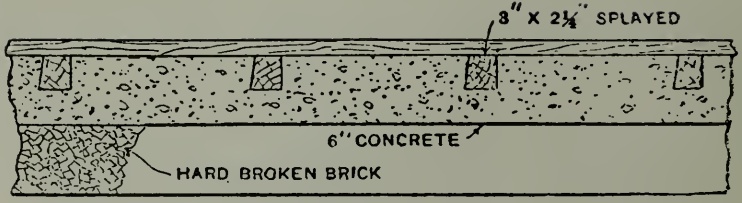


Fig. 4

The floor shown in Fig. 3, of which Fig. 4 is a longitudinal section, is, as regards preparation of ground, provision of hard, dry, brick filling, proportions, etc., of concrete, the same as the floor in Fig. 1, but the concrete is 6 inches thick instead of 4 inches, and the sleeper joists are bedded in the concrete, being first creosoted to protect them from decay.

The sleeper joists should be of fir, free from all defects, and creosoted, 8 pounds to the foot cube, 2¼ inches by 3 inches, extreme scantling, splayed one edge, and securely and evenly bedded in the concrete 1 foot 6 inches center to center.

The "fat" portion of the mix is to be brought to the surface of the concrete, and all floated off level with the faces of the sleeper joists, and upon this floated surface the flooring is laid in a bituminous composition, composed of tar and pitch, in the proportions of 100 pounds of pitch to 7½ gallons tar, boiled together for an hour or more, which will result in an elastic and tough composition when set. The dimensions of the sleeper joists are such as will admit of four being cut out of a 3 inch by 9 inch plank. The flooring is to be in 4½ inch widths, laid with straight joints and splayed heading joints, secured to the sleeper joists with two brads to each joist, weighing 20 pounds per 1000, as in the other floor.

If preferred, instead of creosoted sleeper joists, concrete block 3 inches by 3 inches, and, say, in lengths of 3 feet, may be bedded in the concrete in continuous lines at the same distance apart, the flooring brads being driven into the concrete block.

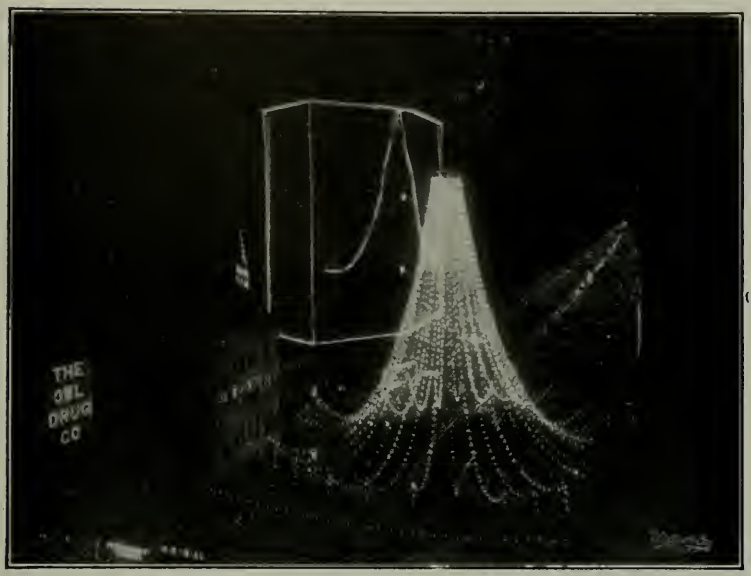
* * *

San Francisco's Remarkable Building Record

ACCORDING to figures that the San Francisco Architectural club has prepared the value of new buildings erected and alterations made in San Francisco from May, 1906, to July 31, 1909, is $139,584,538, divided as follows: Eighty-six class A, value $20,063,260; 113 class B, $8,435,871; 1,477 class C, $45,510,641; 13,444 frame, $55,487,512; 7,198 alterations, $10,087,254.

This, of course, does not include the value of the buildings in course of construction when the figures were prepared. These, with the buildings begun since, would bring the amount very much higher.

The amount of steel used between the dates mentioned is 284,715 tons, valued at $20,784,195, or an average of $73 per ton.



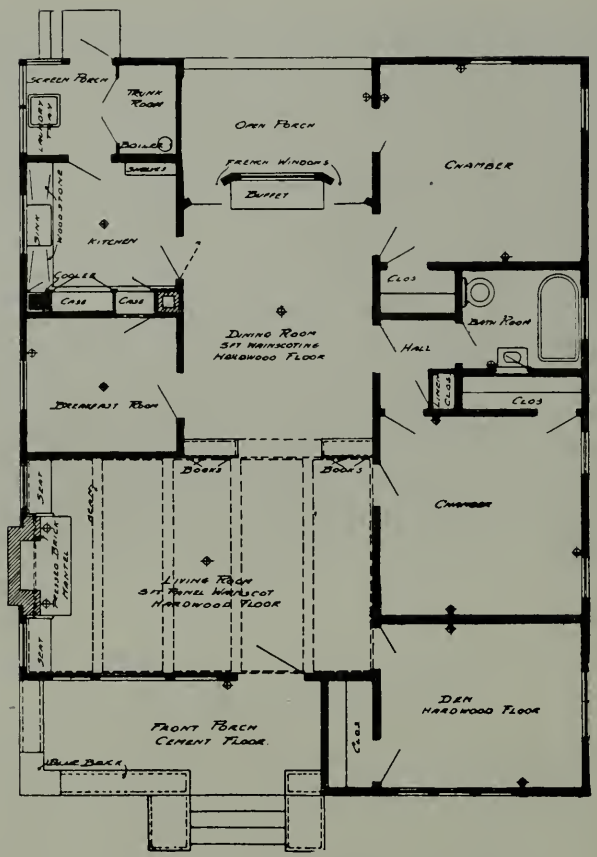
Illumination of Market Street, Looking Towards Ferry, During The Portola Celebration, San Francisco, October 18-23
Central Electric Company, Contractors.

Marvelous Lighting Effects a Feature of the Portola Celebration

ONE of the many attractions of the Portola Festival held in San Francisco October 18-23 was the electrical illumination. Probably no single feature of the celebration will linger so long in the minds of the spectators as the marvelous lighting effects. On Market street night was as bright as day, the illumination covering six miles of thoroughfare. Not only were the streets canopied with myriads of glittering bulbs but the business buildings and hotels were outlined with incandescent lights that pierced the dark background with a sharpness that could be seen for miles. The most spectacular of all the bewildering electrical effects was the great bell built of a thousand lights and which hung majestically over the city at Third and Market streets. The long strings, gracefully looped, flashed white and green, red and yellow, the whole piece spreading out a luster that reached to the farthest hills. An occasional slight breeze would swing the lights in easy motion, presenting a rare spectacle to those below. The effect was even more brilliant than its makers had expected. According to the electrical contractors the bell alone carried over 1200 sixteen-candle lamps, while the total candle power for each night's illumination aggregated something like 30,000,000.

* * *

Farmer Foddershucks—Haow do them summer boarders of yourn keep busy? Reuben Robbins—They play golf. Farmer Foddershucks—What'n Sam Hill's that? Reuben Robbins—'S near's I kin figger it's solitaire shinny.—Cleveland Leader.



Floor Plan of a Seven Room Bungalow, Los Angeles.

A Woman Architect Designed This Ideal Floor Plan

A WOMAN is expected to know just how a house ought to be arranged to secure the greatest convenience and comfort. But there are few women who have any practical ideas about building, and a lesser number who have any practical knowledge of making plans, according to a writer in The Southwest Contractor. When a woman architect, therefore, designs her own home there is naturally keen interest in knowing just how she has worked out the problems that confront every one with limited means in building.

Miss Clara C. Alden, with Edelman & Barnett, architects, Los Angeles, has recently designed for herself a seven-room bungalow to be erected at Santa Barbara street and Halldale avenue.

There are no special features in the exterior construction. It will be the typical bungalow style—resawn redwood siding, shingle roof, blue brick porch and chimney and upper third sash with wood muntins. But the interior arrangement is clever and original. Naturally it is designed to conform to the needs and in a measure the ideas of the family, which consists of Miss Alden, her mother and brother.

The lot upon which the house will be built is 52 by 134 feet and it has a west street frontage. Much is gained by the ample ground space, as the accompanying floor plan will show. The dimensions of the house are 34 feet by 44½ feet. The living room will be 13 by 20½ feet, and the dining room 12 by 14 feet. Both these rooms will have a five-foot paneled wainscot and oak floors.

In the living room there will be a beam ceiling, while the dining room will have a cove ceiling. The fireplace in the former will be faced with old gold pressed brick, and there will be built-in seats on either side. Between the living and dining rooms there will be a cased arch without the customary supporting columns. The bookcases will be built up to the height of the wainscot. The rear of the dining room will be a bay, with a built-in buffet five feet high. Over the buffet will be an art glass window, and on either side French windows.

The rays of the morning sun streaming through the art glass window will give a very pretty effect. The arrangement of the living and dining rooms will also give a very striking and pleasing vista from the front entrance. The trim of these rooms and the den will be slash grained Oregon pine with Flemish oak finish. The den is arranged so that it may also be used for a spare bed room if desired.

No room is wasted in the kitchen, which is built for convenience and with a view to lightening the cares of housework. There will be a wood-stone drain board and ample cupboards and bins. It will be noted that the cooling closet is removed from the kitchen flue and boiler and is on the outside of the house where free circulation of fresh air can be obtained. While ample closet room is provided in the chambers, it will be noted that none of the closets are designed as receptacles for trunks. A trunk room is provided on the screen porch. The woodwork in the chambers, which are each 12 by 12 feet, and the bath room will be finished in white enamel. The rear chamber has a door opening upon an open sleeping porch.

The estimated cost of the house is $2500.

* * *

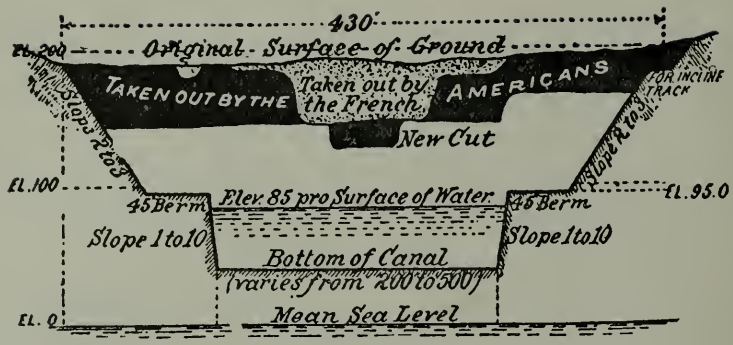
Naming the Twins

The naming of the twins was the subject of an amusing story told by Lady Balfour, of Burleigh.

"A friend of mine," she said, "had the good fortune—or misfortune—to have three sets of twins, and as each pair came the parents puzzled their brains to discover suitable names for them.

"The first pair, being girls, were called Kate and Duplicate; the second, a brace of boys, were named Peter and Repeater, and the third, also boys, Max and Climax.

"But the question then arose: What if there should be a fourth, and even a fifth pair? A young lady solved the difficulty respecting the fourth by suggesting Ann and Another, while in the case of the fifth a well known authoress came to the rescue by suggesting Hugh and Cry."



Section of Culebra Cut

All About the Panama Canal

THE following from the Sphere, London, is, with its accompanying cut, a marvel of conciseness and clearness:

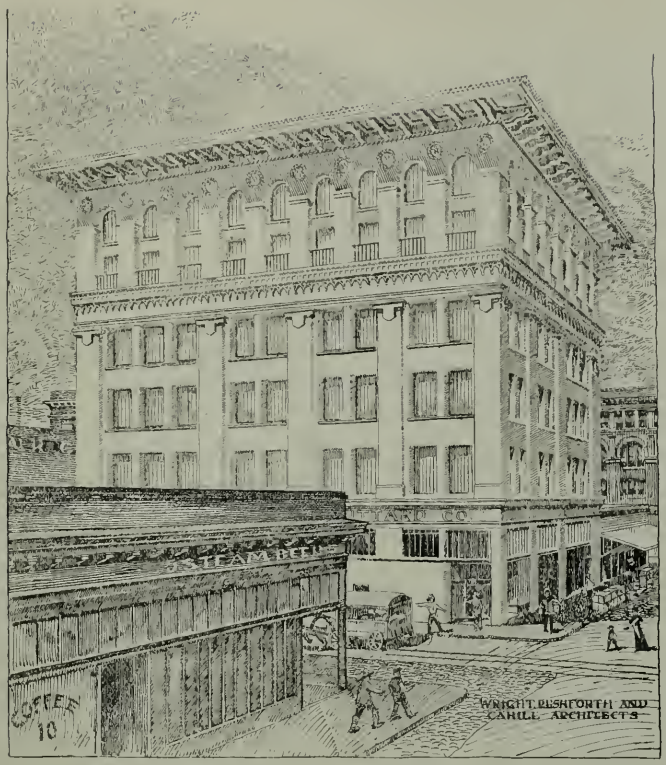
Since May 4, 1904, the Americans, having bought for a sum of about £8,000,000 all the rights and property in the derelict French company, have been in possession of the works and have continued operations on a truly gigantic scale in face of the innumerable difficulties which beset all works in a tropical climate. The chief difficulties which the new proprietors have had to encounter may be divided broadly into three sections: (1) The problem of health and hygiene; (2) the obtaining and maintenance of a sufficient force of laborers; (3) the engineering problems connected with the undertaking. The control of the river Chagres, with its sudden and enormous floods, has been one of the main difficulties to be contended with, and large controlling works and diversions will have to be made to enable the dam to be built. Double sets of three locks in flight capable of accommodating vessels of 1,000 feet in length and 100 feet in width will carry the vessels from sea-level up to the great Gatun Lake, which will have an area exceeding 170 square miles. The navigation channel through this lake will have a minimum depth of 45 feet and a width at bottom of from 1,000 feet at Gatun down to 200 feet through the Culebra cutting, the narrowest part of the canal. At Pedro Miguel, a distance of about 10 miles from the Pacific entrance, the summit level will end, and a descent of 30 feet will be made by means of a lock to a channel of some 500 feet in width, extending as far as Miraflores. Here two more locks will lower vessels to the Pacific sea-level. From Miraflores a width of 500 feet is maintained until the Pacific entrance is reached.

* * *

Have to Show Them

Polar explorers, bear in mind
The people are the jury,
And when you "poll" them you may find
Too many from Missouri.

—The Chicago Tribune.



Design of a Wholesale House for Judge Dorn, San Francisco
(Note the Portola Spirit in the Spanish Decorations)
Wright, Rushforth & Cahill. Architects

Passive Philosophy

Now when a man to silence clings
  Steadfastly day by day,
There are a lot of foolish things
  A fellow doesn't say.

When he pursues his daily round
  And to the line doth hew,
A lot of foolish things, I've found,
  A fellow doesn't do.

And when a chap has reached a pitch
  To mind his biz, you bet,
There's lots of trouble into which
  A fellow doesn't get.

—Louisville Courier-Journal.

Head Building, San Francisco.
William Curlett & Son, Architects.

The Training of a Young Architect

A WRITER in a recent number of the "Architectural Association Journal," gives the following advice to the young architect:

I need not urge you to study old buildings; the young architect takes to that as naturally as a duck to water. But in your study do not waste too much time in making sketches and views. Rather measure and plot in the field what you measure; by that means you can learn scale, one of the chief, as it is one of the most subtle factors in our success. You will learn the relation between the scale drawing, by which we must express ourselves, and the actual building. Do not be afraid of submerging your own individuality; modern architecture can never slavishly copy. A house suitable for the altered ways of our times cannot have the simplicity of plan and arrangement of an Elizabethan house. It is not worse because more complex. Evolution in thought, as in the life and physical structure, always tends to greater complexity, and the loss in simplicity is the necessary accompaniment of the higher life. Your buildings then are inherently different; but in the things which have to please the eye only, you will find that man's affection goes out to all that his fathers have loved; that the ways of using materials which commended themselves to your forefathers were arrived at by long trial and effort, and based on sound reason, and can only be improved on by patient and slow advance—never per saltem.

Remember that the soldier passes but little of his life in the actual clash of opposing squadrons the love of which perhaps made him a solider. So a large part of your life must be passed in the patient drudgery of your profession, in working out schemes for petty alterations, entailing great labor, but giving little scope for what you rightly call real architecture. But in it all, there is a right and a wrong way to do it, and when you tackle an uninteresting problem in the right spirit, you strengthen your intellectual muscles for some contest more worthy of your powers, and keep yourself in training for the time when you have to battle with some difficulty calling forth them all. For, remember, everything seems arrayed against the architect. The inertia of men and things which is so appalling, must be overcome; you have to go out to do battle with your brick and stone.

* * *

Artistic Bathrooms

A well-to-do man, whose new residence was recently completed, hit upon a novel plan for decorating the bath rooms. In one of them the floors and walls represent the bottom of the ocean. Marine plants and fishes are painted on a dark green back ground. In the other bath room the beach at Atlantic City is represented, and among the crowd of bathers are the man and his family. The work was executed by a well-known artist, and the likenesses are good.

* * *

It Sometimes Happens

"You say Opportunity once knocked on his door?"

"That's what she did."

"Where was he at the time?"

"He was out telling another fellow how to succeed."—Birmingham Age-Herald.

Salesroom of the Inlaid Floor Company, San Francisco, Showing Specimens of Some of the Firm's Beautiful Work

Cleaning of Brick Fronts

An expert in the sand-blasting trade who has operated on many buildings, on being asked as to the efficiency of the sand-blast upon soiled brickwork, said that he could not advise it except when the brick were extremely hard. When used against stone the blast does not remove the original face of the brick, he said, "only the grime." That is the aim of the skillful operator. But in the case of brick not extremely hard the result might be different.

You can imagine that the force with which sharp sand can be driven through a fine nozzle is very great. If permitted it would actually cut a stone in two in no time. In the case of granite, marble and cut stone the skillful operator preserves the original face of the block, but he cannot guarantee to do so with respect to all sorts of front brick. I would advise cleaning front brick with acid instead of sand-blasting. The same opinion seems to be held abroad. The cleaning of brick fronts was the interesting subject of a paper recently read before the German Association of Brick and Terra Cotta Manufacturers. The author protested against the use of sand-blast or other method by which the original face of the brick would be taken away, saying:

"When the blast is used, and the face of the brick taken off, cleaned front will show a good appearance only for a short time, as the brick with the original face removed will be very much more porous than before, and absorb dirt more readily. The use of steel brushes is also very bad, and will not give a first-class job.

"The best method is cleaning the brick fronts with a solution of muriatic acid. The strength of the solution can be made to 1 in 12. When this solution is too strong for the brick, acetic acid should be used. A good soap solution will, as a rule, take off all thick dirt, and the cleaning with acid solution can then be done easily."—National Contractor and Builder.

* * *

"Maria, do you remember that fine dinner you got up all by yourself on the day I asked you to be mine?" "Yes, indeed, George!" "Everything was splendid." "I am sure it was." "Ah, I wish your mother was living with us now, Maria!"—Pluck.

Will Terra Cotta Replace Wood?

THE approaching world's timber famine is beginning to worry constructors, and will mean that if afforestation is not taken in hand immediately other materials must be found to take the place of wood. The United States Government has established laboratories at various centers for the purpose of testing all sorts of structural materials. The results of these tests are published from time to time, and in this way architects, engineers and contractors are informed as to the capabilities of the materials.

Only within the last year or two has general interest in the diminishing timber supply been aroused, and to that condition may be traced also the invention of novel building materials.

Thus there is a constant attempt to employ for building the only substance of which the supply is unlimited, the soil of the earth itself. Especially is this so in and near the big cities, where the scarcity of timber and the consequent high prices are felt most seriously. For here the difference in price between a frame house and a house of more solid material is so small as to be unimportant.

Illustrative of the general tendency to find substitutes for wood is the suggestion of Herbert M. Wilson of the United States Geological Survey, that scientific investigations into the properties of clay be undertaken. The American Ceramic Society made a start in this direction by appointing a special committee to report upon a plan "for systematizing the study of clay products."

Individual builders meanwhile have gone ahead and demonstrated the practicability of their ideas. Last year the building departments of New York city, for the first time in its history, received plans for a terra cotta house. The plans were passed upon favorably, and the house, which belongs to a professor in a New York university, has just been completed.

In the suburbs around New York there have been put up recently several terra cotta dwellings. The principal element in them is the hollow-tile block.

* * *

Ugly Interiors Disappearing

THE increase in the demand for artistic interior decorations by the home-owners of America is making its influence felt, and the keener minds in the field are not slow to take advantage of the new conditions. While there are those who will maintain that there is no material change in the order of things, their wiser competitors, alive to every opportunity, make the most in dollars and cents of the new call for really decorative furnishings. The great middle class has awakened to an appreciation of the absurdity of their satisfaction with ugly furniture, wall paper and other features that make up the rooms in which they spend the greater part of their lives. It is good that they should begin to realize the uselessness of giving their homes an unpleasant aspect when it entails scarcely any more expense to have everything agreeable and artistic.

The interior of the average American home has undergone a radical change. The day of the painful wall paper, offensive rugs and hideous chromo is fleeting. Even in remote places, those who have money enough to erect a fine house seek to have the interior in keeping with the outside view. Not so many years ago it was a common thing to come upon a

handsome exterior that housed a collection of impossible monstrosities in the way of decorations that the poorest designer could imagine only in a horrible nightmare.

The origin of the change was in the larger cities. It was natural for those who traveled abroad and came in touch with beautiful European furnishings to desire something artistic in their own homes. And out of the desire grew the demand. As the visits to foreign countries became easier and less expensive to undertake, the influence on American home-owners grew. This influence was felt in the big cities first, but the dwellers in the larger centers of population soon communicated the feeling to their country cousins.

In these days when intercourse between the people of every section is so great, the interchange of ideas keeps even the rural folks quite up to date. Farmers use automobiles to go to market, and at any big convention of agricultural interests hundreds of automobiles are in evidence. There are few people who understand to what an extent automobiles have replaced horses in the farming sections. So, too, in the homes of the wealthy farmers, the mounted canary in a glass case has lost his prestige, and the china dog no longer keeps watch lest the visitors disturb the family crayons. The stuffed crocodile and the iron turtle have been relegated to the lower regions to keep company with the cook. When Denman Thompson first produced "The Old Homestead," all the horseplay in it was amusing. When the old man visited the city his lack of acquaintance with modern furniture made him uncomfortable indeed, but if you saw the famous play recently you know that his uneasiness furnishes little amusement, for he must be out of the world entirely to be so ignorant of the decorations that are supposed to cause him so much wonderment. Even in the rural districts, Denman Thompson's antics, when he first comes in contact with the "city furnishings" would arouse no laughter, for the ruralites are advanced in the knowledge of what's what.

Old ideas in decoration, as in other things, are gone. A new day has come. Easy and cheap transportation made new and better conditions in the smaller cities. Now whatever influences the metropolis in a lasting way soon makes itself felt in every nook and corner of the country. A change in one line makes a change in many, and certain conditions make themselves felt in every line of business. There's a cause for every radical change, and it is seldom difficult to trace the reason of any marked development of taste.

In this instance the commercial enterprise of Americans has been instrumental in bringing about a greater demand for decorative home interiors. Business and art may be separate, but generally there are commercial reasons back of the growth of an artistic idea. The spread of the desire for artistically decorated homes has been rapid and grows each day. In the decorative furnishing business, the leaders know that a new day has dawned.—Interior Decorator.

* * *

Carpenter's Long Fall

While Joseph Beauleu, a carpenter, employed in the erection of a tower for one of the attractions for the exhibition at Sherbrooke, Man., was on the topmost part of the tower, the board upon which he was standing broke and he fell a distance of 91 feet into a tank containing only two feet of water. He was practically uninjured.—Winnipeg Tribune.

House of Dr. A. M. Barker, San Jose
Wolfe & McKenzie, Architects

Southern Pacific May Adopt the Concrete Railroad Tie

A SAN JOSE man has invented a reinforced concrete railroad tie which comes nearer the goal of success than any similar invention yet placed on the market. The Gates tie—Gates is the inventor's name—has been given a most severe test in the freight yards of the Southern Pacific railroad at San Jose, and despite the heavy traffic to which it has been subjected not a single instance has developed where the concrete has shown signs of breaking or other evidence of weakness under the rails. The value of this device to the railroad world is fully appreciated by those who are in the transportation business for they, better than the layman, realize the cost of maintaining a roadbed where the loss by decay, breakage and the ravages of insects aggregates millions annually.

There is one feature about the Gates' reinforced railroad tie that is deserving of more than passing notice and that is the fact that it is so constructed that it possesses a certain amount of elasticity which, according to the best informed railroad men in this country, is absolutely essential where the traffic is heavy. Apart from the fact that the tie itself is practically indestructible it has still another advantage which the wood tie cannot claim and that is the clutch which holds the rail to the tie, preventing derailments and thus reducing to a minimum the primary cause of nearly all railroad accidents.

That the concrete tie will ultimately replace the rail support now in use seems a foregone conclusion, as its commercial value has been fully established by the severe test given it during the past two months in the yards of the Southern Pacific.

Among the Architects

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Opens Office in Oakland.

Architect Lewis Stone, formerly of Stone & Smith, Mechanics' Bank building, San Francisco, has established offices in the Bacon building, Oakland, where he will continue the practice of architecture and will be pleased to see the many clients of the old partnership. Considerable work that was taken during the partnership of Stone & Smith will be carried on by the old firm until its completion, including the reconstruction of the High school at Fresno.

License to Practice.

At the last meeting of the State Board, Southern Division, the following were granted State certificates: J. J. Backus, chief inspector of buildings, Los Angeles; F. P. Davis, A. L. Acker, H. F. Whitney, E. C. Andrus.

Annual Meeting of San Francisco Chapter, A. I. A.

THE annual meeting of the San Francisco Chapter, American Institute of Architects, was held in the white and gold room of the Hotel St. Francis on Thursday evening, October 21, 1909, with the largest attendance in the history of the chapter. The guests of the evening were: Mr. Cass Gilbert, president of the American Institute of Architects; Mr. Irving K. Pond, second vice-president, and Messrs. D. J. Myers, W. R. B. Willcox, Carl Gould, A. F. Rosenheim, August G. Headman and M. A. Vinson.

The principal business transacted was the appointment of committees to draft suitable resolutions upon the deaths of Mr. Charles F. McKim and Mr. Robert H. White, a former member of the chapter; the election of Mr. George Taylor Plowman to membership in the chapter, and the election of officers for the ensuing year, which resulted as follows:

Mr. William Mooser, president.

Mr. Louis C. Mullgardt, vice-president.

Mr. Sylvain Schnaittacher, secretary and treasurer.

Messrs. Henry A. Schülze and William Curlett, trustees.

Mr. Cass Gilbert, the distinguished guest of the Chapter, then addressed the meeting, stating his appreciation of the manner in which he had been received and entertained during his visit to San Francisco, and of his admiration for the performance architecturally which he had noted, and for the spirit behind it. He spoke learnedly of the profession of architecture, the duties of the architect and the relation between architect and client, and the underlying principles of the American Institute; of the necessity of architectural organizations with a common purpose of acting in harmony; also the necessity of the architectural organization, and of the individual taking an active interest in all affairs in which architecture is concerned. He spoke of the power of the architect and of architectural societies in civic and political affairs and urged that that power be used in uplifting the profession.

Mr. Gilbert said it was his opinion that it would be but a matter of time when a Council of Fine Arts would be organized at Washington to supervise the design of public monuments, and also only a matter of time when Institute conventions would be held on the Pacific Coast. He spoke on the general contractor and his relation to the architectural profession, and advised the Chapter to guard against this danger. He further advised the Chapter to take an active interest in the conservation of the natural resources of this country, and closed his remarks with a tribute to Mr. John Galen Howard for the work and architecture of the State University.

Mr. Irving K. Pond was next introduced, and spoke of the business side of the architectural profession and told what had been accomplished in Illinois by the Illinois Chapter, the Chicago Architectural Club and the Chicago Architects' Business Association. He spoke of the necessity of providing education to obtain able draughtsmen, and expressed his appreciation for the attention he had received during his stay in San Francisco.

Mr. A. F. Rosenheim, the new president of the Pacific Coast Architectural League, made a few brief remarks and was followed by Messrs. Myers, Willcox, Gould, Headman, William Curlett and J. W. Reid.

The retiring president of the Chapter, Mr. Pissis, was tendered the thanks of the Chapter for the able manner and fidelity with which he presided for the past three terms.

Irving K. Pond Banqueted by Los Angeles Chapter.

Mr. Irving K. Pond, vice-president of the American Institute of Architects, was guest of honor at a banquet given in the Dutch room of Levy's cafe, Los Angeles, by the Southern California Chapter, A. I. A. About twenty-five members of the Chapter were present, President Frank D. Hudson acting as toastmaster. Mr. Pond addressed the gathering in a happy vein, assuring his hearers that the Southern California Chapter was next in his heart to his own Chapter, for to the warm support of the delegates from Southern California he felt he owed his present position of honor in the Institute. He spoke in terms of praise of the types of architecture he had seen on the Pacific Coast.

Other speakers who dwelt upon various topics of interest to the profession were: Mr. Myron Hunt, who spoke of the work and convention of the Architectural League of the Pacific Coast, which was the prime motive of Mr. Pond's visit here: Messrs. Octavius Morgan, John P. Krempel, Fernand Parmentier, A. B. Benton, Theo. A. Eisen, J. Lee Burton, J. J. Backus, who was present as a guest, and others.

Still in Berkeley

Architect George T. Plowman of Berkeley states that he has no intention of removing his office from the college town to Los Angeles. Berkeley is good enough for him. He has, however, opened a branch office in the southern city temporarily while certain work for which he is the architect is under way there.

Engineers and Architects Association.

The first monthly dinner of the winter season was held by the Engineers and Architects' Association of Southern California at the Hollenbeck Cafe, Los Angeles, in October. Sixty-six members and guests were in attendance. In the absence of other officers Mr. George P. Robinson presided. Mr. H. Hawgood, who had been invited by the program committee to give an illustrated talk on San Pedro harbor, was unexpectedly called to San Francisco on business and his duty as chief entertainer was ably filled by Mr. A. H. Koebig, who had hurriedly prepared a paper on the Los Angeles harbor project. A discussion by the members followed, during which Mr. Koebig suggested that reinforced concrete, if it had been thoroughly tested as a durable construction in this class of work, would prove a desirable material for harbor improvements. Mr. E. L. Mayberry asserted in reply that reinforced concrete had been put to severe tests and had thoroughly demonstrated both its practicability and durability.

Pomona City Hall.

Architect H. Alban Reeves, of Los Angeles, has been commissioned by the city trustees of Pomona to prepare plans for the new city hall to be erected on the block of land bounded by Fourth, Fifth, Main and Thomas streets. The building will be two stories in height, 70x90 feet, and built of brick with artificial stone trim. It will contain the council chamber and offices for the various municipal officers. Thirty thousand dollars is available for the construction work.

$200.000 French Chateau.

Architects Francis X. Lourdon and Maurice Herbert of Los Angeles have prepared plans for a chateau of the French Rennaisance type for A. Cherbourgh, to be erected near Chicago. It will be four stories and basement and will contain about 50 rooms. Terra cotta and stone will be used in construction. The estimated cost is about $200,000.

Lansburgh & Joseph Dissolve.

Architects Lansburgh & Joseph, which firm has designed many prominent buildings in San Francisco since the fire, including the Orpheum theater and the Gunst buildings, has dissolved partnership, the dissolution becoming effective on the first of this month. Mr. Lansburgh retains the offices of the old firm on the top floor of the Gunst building at Third and Mission streets, while Mr. Joseph has moved to a suite of offices in the First National Bank building.

Rixford Has His Troubles.

It seems that the San Francisco Board of Public Works is not entirely satisfied with the services of Loring P. Rixford, who succeeded Newton J. Tharp as City Architect. According to the San Francisco Bulletin the hostility towards the city architect has been growing as the result of his apparent neglect of the work of his office. To quote from the Bulletin: "Four times in the last two weeks he has allowed the Board of Public Works to advertise for bids from specifications issued from the office of the city architect and after the bids were in, made minute changes in the specifications which compelled the board to turn down all of the bids received and advertise again.

"'The changes were so small,' said Mr. Casey, 'that if proper care had been given to the draughting of the specifications in the first place they would not have been needed.'

"Rixford is blamed for putting the board in a wrong light with the public and with the contractors, and was called upon by President Day at the meeting of the Works Board, to make an explanation of the need of changes in the specifications. His reply was:

"'We have expert men in our office to do what we believe is best. That's all there is to it.'

"But that is not all there is to it, as the Board of Works is tired of shouldering blame for laxity in Rixford's office. Rixford has not stood in favor because of his apparent forgetfulness that he was an employee of the board. He was selected to the office by Commissioners Day and McGilvray, Casey declining to vote for him. He was chosen to succeed Newton J. Tharp, as he was a relative and a close friend of the former architect and supposed to be familiar with the work."

Railroad Y. M. C. A. Buildings.

The Atchison, Topeka & Santa Fe railroad has appropriated $150,000 for the purpose of erecting a series of Y. M. C. A. clubhouses at various points along the route for the use of employes. Buildings will be constructed at Dodge City, La Junta, Raton, Las Vegas, Albuquerque, Williams and Los Angeles. The work will be under the supervision of competent architects, and the buildings will range in cost from $10,000 to $25,000.

Phoenix Bridge.

The Board of Supervisors of Maricopa county, Ariz., have accepted the plans of Mayberry & Parker, engineers, of Los Angeles, for a mammoth reinforced concrete bridge over Salt river at Phoenix, Ariz. The plans provide for a structure 2,500 feet long, with approaches of over 600 feet.

San Francisco Polytechnic School.

Plans have been prepared by City Architect Rixford of San Francisco for the new Polytechnic high school which will include a group of buildings situated between Frederick, Willard and Carl streets. There will be three buildings in all. The central structure will be 200 feet long, with a depth of 140 feet and will be four stories high with a basement.

This central structure will be flanked by a two story building on either side which will be 60x60 in dimensions. The shops for technical instruction will be housed in the two story structures.

A gymnasium is included in the building scheme. It will be 56x90 feet in ground dimensions.

The sum of $600,000 was voted by the city for the construction and equipment of the school. The cost of the building is estimated at $500,000, leaving $100,000 for equipment.

Manual Training School for Los Angeles.

Ten acres of land lying between 40th street and North avenue, and fronting 660 feet on the west side of Vermont avenue, Los Angeles, has been purchased by the city board of education as a site for a manual training school, for which Architects Parkinson and Bergstrom are preparing the plans. The new building will accommodate 1,500 pupils and will be two stories high and constructed of reinforced concrete or brick with a cement plaster finish. It will be equipped with a heating and power plant, inclined floor to auditorium, domestic science rooms, gymnasium, chemical and physical laboratories, library, cloak and locker rooms, lavatories, etc. The estimated cost is $245,000.

$600,000 Office Building for Portland.

Architects Reid Bros. of San Francisco have prepared plans for a handsome fifteen-story office building to be erected at Fifth and Alder streets, Portland, for J. B. Yeon, capitalist, and the firm will probably maintain a branch office in the northern city while the building is under construction. Contracts are now being let. The building will be class A and will have an attractive front of terra cotta. There will be stores on the ground floor, a cafe in the basement and offices single and en suite above the second story. There will be four fast running passenger elevators. The estimated cost of the building is $600,000.

New Plan for City Hall.

A probable solution of the San Francisco City Hall problem, with which the supervisors have been struggling for months, has been found in the suggestion of Louis Cowles, an architect, who has submitted plans for a structure which can be placed either on the present site or on a new one as the board may determine, at a cost not to exceed $3,600,000, and possibly less. Moreover, under the Cowles' plan the hall can be built from the current revenues without the necessity of another bond issue. Supervisors Pollok and Payot, who have made a cursory examination of the plan, are so well pleased with it that they intend to have it submitted to the building committee, with a view of making a fuller examination. Cowles' scheme provides for a main structure near the center of the present site, running into a dome, with five buildings radiating from it, and with an arcade connecting the Hall of Records. The main structure will be a rotunda surmounted by a dome. The five wings will be four stories in height, and there will be entrances on City Hall avenue, McAllister and Larkin streets, with other entrances to each of the wings. The building will be of heavy steel construction, with ornamental iron work and glass. There will be no stone used.

Architects Score Burnett Act.

The regular monthly meeting, following the summer vacation period, of the Southern California Chapter of the American Institute of Architects was held Tuesday evening, September 14th.

The chief topic of discussion was concerning the new Burnett Tenement House Act, which has proved a source of annoyance to the architect and owner alike. Among the provisions which found general disfavor were those relating to the construction of light courts, although few of the more radical new provisions escaped their measure of disapproval. It was the general opinion that the act has tended to discourage the construction of apartment houses in Los Angeles. Many inquiries for interpretation of special provisions were made of Chief Inspector of Buildings J. J. Backus, whose views from his official position as head of the Department of Buildings, were particularly sought as bearing upon projects claiming the immediate attention of the architects. It was the opinion of the members that the law is unconstitutional.

The chapter instructed its judiciary committee to bring pressure to bear upon the city officials in favor of immediate action upon the publication of the revised building ordinances.

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Telephone Douglas 1828
Builders' Exchange, Oakland
Room 234—142 Broadway, Los Angeles
406 Lumberman's Bldg., Portland, Or.

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CALIFORNIA HAS A DISTINCT TYPE OF ARCHITECTURE.

By CASS GILBERT, President A. I. A.

In California there is developing a distinct type of domestic architecture. The hope has often been expressed that a distinctive American type of architecture would be produced, and I think that there is developing such a type here.

The California bungalow is distinct from the bungalow of India, from which it takes its name, and entirely different from the seaside homes of the East. It is a type of architecture of beauty in its broad lines and depth of shadow.

GOLD MEDAL FOR MOST BEAUTIFUL PUBLIC BUILDING

The Architectural League of the Pacific Coast has started out well. Although still in its infancy its life of usefulness is already being felt. No more popular move could have been made by the League than that taken at the first annual convention in San Francisco the past month, when it was decided to offer a gold medal annually to the coast city which shall have attained the highest merit in the architectural beauty of its public buildings. The gift will unquestionably accomplish the end sought—the encouragement and promotion of the things which make for the "City Beautiful." Every town of any size on the Pacific Coast will be permitted to compete for the medal. The result will be that each municipality will strive to outdo her sister city in building civic structures that will best harmonize with the region in which they are located. A committee will be appointed to determine upon the medal winner and the name of the fortunate city will be announced at the annual convention of the league. We cannot have too much of this spirit of civic patriotism and the league is to be congratulated for

taking up the matter at a time when so many municipalities are planning new city and county structures.

ONCE AGAIN: BUILD FIRE-PROOF BUILDINGS

Fireproof construction, for which Mr. F. W. Fitzpatrick of Washington has been an untiring worker, is more a reality to-day than ever before in the history of American building. The architect and the owner are at last beginning to realize the enormous waste that follows in the wake of semi-fireproof construction. The American Architect calls attention to the decreasing use of inflammable materials for office buildings and accepts the fact as a hopeful indication of an undoubted movement for better buildings. But, while signs of reform are evident, there are nevertheless some deplorable abuses of the "absolutely fireproof building" movement. For illustration, we have a number of buildings in San Francisco whose steel frames and concrete walls would make the spread of fire well nigh impossible but for the wood floors and door and window sash in the same buildings. Of what earthly use are fireproof walls and partitions having openings finished with wood jambs and trim and doors of especially well seasoned wood?

The floors, more often than not, contain an inexcusable amount of lumber. They consist of wood sleepers, a rough floor and a finished floor aggregating with the sleepers more than two inches thickness of wood over the entire floor area. Altogether, does it seem remarkable that fires appear to be capable of doing considerable injury to so-called fireproof structures?

Architects' Election.

At the third annual meeting of the Southern California Chapter of the American Institute of Architects, held in Los Angeles in October, Frank D. Hudson was elected president; J. Lee Burton, vice-president; Fernand Parmentier, secretary; August Wackerbarth, treasurer.

Important Competition for Courthouse.

AS STATED in the October Architect and Engineer, Bakersfield, is planning a magnificent courthouse and the board of supervisors has determined upon the rough outline of the sort of building which it believes will be most suitable to the needs and ornamentation of Kern county. The supervisors want competitive plans for a building to cost not more than $350,000. The clerk of the board is Mr. I. L. Miller. The following tentative outline for the design and arrangement of the building has been issued by the supervisors for the guidance of architects who may desire to prepare sketches:

The building is to be three stories in height, with a basement. The basement walls are to be of granite up to the first floor level. Chairman Jastro's preference is for the exterior of the superstructure to be of white sandstone brick. The floor beams are to be of steel and the floors and ceilings tiled, making a fireproof structure.

The building is to have thirty-eight rooms, besides vestibules, halls, vaults, closets, etc., according to the tentative outline in the minds of the supervisors. Mr. Jastro said the members of the board had not sketched the sky line, but he personally was not in favor of many towers and turrets. "Of course there will be a rotunda," he said. There will be an elevator for the benefit of the public and the officials who may have grown too decrepit in the service of the county to climb stairs nimbly.

The arrangement of the rooms by stories will be as follows, unless the present plans are changed:

Top floor—Three court rooms; three judges' chambers; three jury rooms; one grand jury room; bailiff's office, law library.

Second floor—District attorney's office (three rooms), supervisors' room with seating capacity for 200 citizens, three offices for the county clerk, offices of the superintendent of schools, board of education, coroner, public administrator and surveyor.

First floor—Offices of the assessor, auditor, tax collector, treasurer, boiler inspector, health officer, bee inspector, livestock inspector, oil well inspector, horticultural commissioners.

Basement—Janitor, justice of the peace, boiler plant.

Plans must be submitted before December 13.

HEATING AND LIGHTING

The Illumination of a Home Dining Room

By Norman Macbeth in the Illuminating Engineer.

RESIDENCE dining rooms can probably be more easily and effectively illuminated than any other room in the home; but, notwithstanding the simplicity of the problem, the effectiveness of the installation can be, and in very many instances is, very seriously impaired by using fixtures which are entirely unfitted for the purpose. The opinion has been expressed that careful attention to the lighting of the dining room will result in more pleasure to the occupants than may be derived from the illumination of any other room in the house.

The illumination of the dining room shown in Figs. 1 and 2 has been the subject of much favorable comment, and has rarely failed to arouse the enthusiasm of guests, the climax apparently coming with the announcement that the source is an inverted incandescent gas lamp.

Fig. 1, a night photograph, does not convey a proper impression of the illumination of this room. The dome, which is the only light source used, is made of amber, green, rose and ruby colored art glass, and practically all of the light transmitted by these colors to the side walls and ceiling is non-actinic, so that, while these parts of the room are satisfactorily lighted when judged by the eye, these colored rays are of no value on a photographic plate. This may be noted by observing the detail shown in the lower left hand corner of Fig. 1,

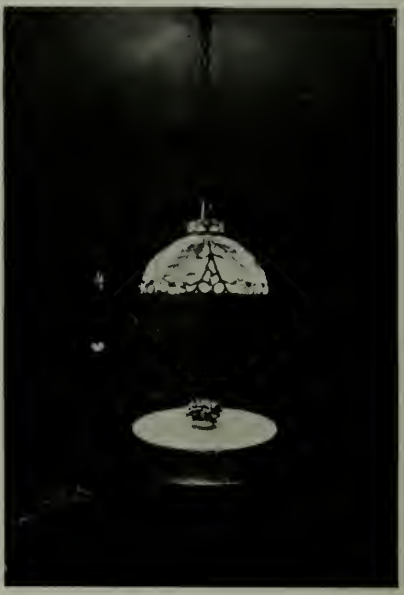
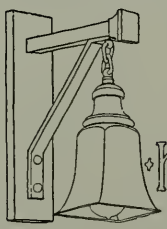


Fig. 1.—Night view of the dining room.



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where the dark rug is lighted directly from the under part of the dome, and the light wall paper, shown in the rectangular space in the center of this photograph, between the china cabinet and the door, receives transmitted light only; the rug appears to be of a lighter color than the paper. By reference to these same sections in the daylight photograph, Fig. 2, where the tones are given more nearly their correct weight, the above point may be appreciated.

Illumination measurements were taken on a horizontal plane at the table height, for the purpose of determining the intensity effective on the table when it is used as shown in the photographs, or when extended to a greater length. Measurements were also taken on the wall and ceiling to show the increases in illumination at these points, due to light reflected from the table when it was more or less covered with linen.

The proper height at which to place the dome was made the subject of a thorough investigation, as was also the proper reflector to be used within such a dome. In Fig. 3 the position of the eye of a person seated at the table is shown, at the right hand, when sitting upright, and at the left when leaning somewhat forward. It will be seen that a person at one side of the table can plainly see over the top of the heads of those seated opposite and at the same

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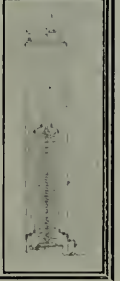

Fig. 2.—Daylight View.

time neither the mantle nor the reflector can be seen, unless one leans far forward and purposely looks up. Placing the dome higher would bring the full glare of the mantle into the eyes, while lowering it would cut off the view of those on opposite sides of the table.

The relative positions of the lamp and reflector within the dome is such that the vertical angle, from the center of the mantle to the lower edge of the dome, was as small as could be secured, thus permitting the location of the dome at the highest point above the table without violating that more important consideration—keeping the lamp out of the direct line of vision; that is to say, having the lamp and all sources of high intrinsic brilliancy entirely above the lower edge of the dome when viewed from any position around the table.

Summary of Installation.

Dimensions of room, 12′ 10″ x 13′ 10″.
Height of ceiling, 9′ 0″.
Height of table, 2′ 5″.
Height of lower edge of dome, 4′ 6½″.
Height of dome above table, 2′ 1½″.
Height of mantle above table, 2′ 1½″.
Number of mantles used, 1.
Nominal consumption cubic feet of gas per hour, 3.3.
Pressure during test, in inches water, 3.8.

Illumination measurements were made on a horizontal plane 29 inches high

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(table height) at 1 foot distances, from the side wall to directly beneath the lamp, and at intermediate stations 5 and 13, beyond the latter being where the illumination falls off abruptly, due to the edge of the dome cutting off all direct rays.

The values given below for stations 1 to 9 are the averages of the two sets of readings taken at right angles, indicated in Fig. 4.

The mantle was the original one fitted to this lamp, and had been in use regularly for over six months; no adjustments were made of the lamp, nor were changes in pressude during any of the tests. These were as follows:

No. 1, alabaster cylinder only.

No. 2, half-frosted cylinder only.

No. 3, prismatic distributing reflector with half-frosted cylinder.

No. 4, opal distributing reflector with half-frosted cylinder, the results of which are given in table No. 1.

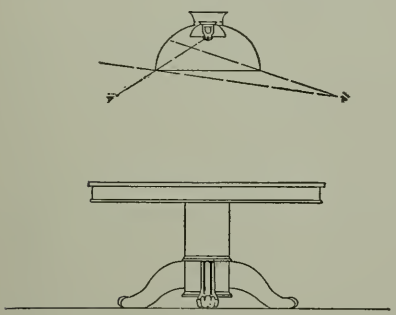

Fig. 3.— Position of the eye of a person seated at the table

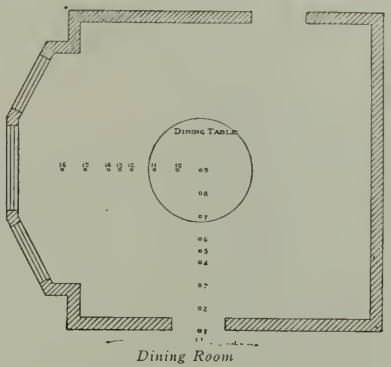

Fig. 4.—Plan of Stations.

The distribution with the prismatic reflector is shown to be somewhat more uniform than that with the opal reflector.

The appearance of the dome was somewhat better with the opal reflector than with the prismatic; the main objection, however, was due to greater depth of the latter when used with this dome, which would bring the lower edge of the prism glass in the line of vision.

Using the dome without a reflector resulted in an unequal and excessive illumination of the art glass, detracting very considerably from its appearance.

In table No. 2 are given the stations, angles, intensity in foot-candles and the apparent candle power, the latter calculated from the horizontal illumination.

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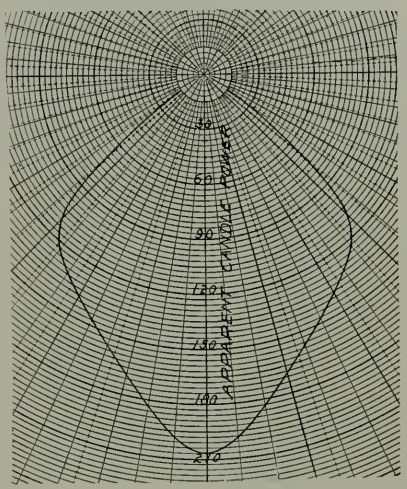

Fig. 5.—Polar Distribution Curve.

Fig. 5 is the polar distribution curve of the inverted incandescent gas lamp with half-frosted cylinder, opal reflector and art glass dome, and is somewhat interesting, as the distance from the center of the mantle to the photometer screen was but 2.91 feet.

The illumination, as measured on the walls and ceiling, with mahogany table, without covering, shows an average intensity of approximately .2 foot-candles. With the table partially covered with doilies the illumination was increased 210 per cent, and with a table cloth the increase was 520 per cent, resulting in approximately 1.25 foot-candles effective on the walls and ceiling, both of which, from a decorator's standpoint, would be classed as light, the walls being a very light gray and the ceiling a light tint, nearly white.

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Table No. 1.

Test No..	1	2	3	4
Station No.	Alabaster cylinder only. Foot-candles.	Half-frosted cylinder only. Foot-candles.	Distribut'g prismatic reflector with half-frosted cylinder. Foot-candles.	Distributing opal reflector with half-frosted cylinder. Foot-candles.
1.....	.09	...	...	...
2.....	.13	...	.14	.13
3.....	.16	.15	.22	.21
4.....	.39	.35	1.16	.61
5.....	1.03	1.53	2.95	2.33
6.....	2.33	2.8	4.53	4.30
7.....	4.35	5.5	9.2	8.50
8.....	5.95	9.05	15.78	15.80
9.....	7.00	12.5	17.95	24.28

Table No. 2.

Station.	Angle. Deg.	Min.	Foot-candles in	Apparent candle-power
9.....	0		24.28	207
8-10	19		15.8	159
7-11	34	20	8.85	133
6-12	45	40	4.3	107
5-13	50	0	2.33	74.6
4-14	53	40	.61	24.8
3.....	59	30	.21	13.4
2.....	64	0	.13	10.4

Hanging Lamps.

In many a hall-way is hanging an old-time lantern that performed the same service in a hall two hundred years ago, though, to be sure, they do not now contain the oil lamp, the tallow dip, or a wax candle. On the contrary, they may be fitted out with electricity, and shine forth all the more bravely with a borrowed light, though they certainly do not look out of place in the midst of the old-fashioned furniture that plays its part in so many homes at the present day. Yet the taste for this old type of metal work is apt to be overdone. I have seen a lamp hanging in a house, clumsily made of wrought iron, which looked as though it had been made by a prehistoric blacksmith. To my friend's artistic soul this crudity, this simplicity of design, this clumsiness of manufacture, no doubt appealed. But the lamp, though placed in the hall of a most magnificent building, was more fitted to be hung behind a barn door.

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Quaintness in hall lamps is worth while if they combine utility with beauty, and there are many beautiful specimens to be had, with this desirable combination.

Ugliness is always ugly, and the fact of it being two hundred years old should not be any better recommendation for its preservation.—Ex.

Electrolier at San Diego

Street Lighting in San Diego, California.

By C. E. GROESBECK.

THE move for better street lighting, which has spread over the entire country during the past two years, came in from the West, like the weather. The Pacific Coast was the leader in the movement, one city after another taking it up in quick succession and with remarkable enthusiasm.

San Diego must be counted among these enterprising cities. The character of the installation may be fairly judged

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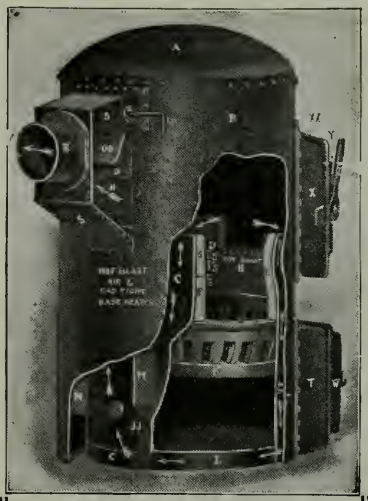
from the illustration shown. The lamp standard is particularly handsome and elaborate. Six of these standards are placed in each block 200 feet in length, and eight on the 300 foot block. Ninety-six are now in service, and 200 more are being installed. The lamps are lighted from dusk until midnight each night, the property owners along the thoroughfare paying the cost of lighting. Each standard carries six 16-candle power carbon filament lamps and one 32-candle power lamp in the large central globe. Twelve watt series tungsten lamps run in multiple from a transformer attached to the base of the post are being tested. The illumination, as well as the installation, is very satisfactory—so much so that the property owners and merchants along all of the busy streets are taking means to have similar installations made at the earliest possible date.

While the design of the lamp standards is open to criticism from the purely utilitarian standpoint, owing to the obstruction offered to the upright lamps by the rather massive arms supporting them, the distinctly decorative effect of the installation fully compensates for this slight loss in illumination, at least in the opinion of the merchants from whose private purses it is installed and maintained. The merchant realizes that the looks of his store are not to be neglected, and if this is true of his store it is equally true of the street on which his store is located.

The fact that this installation is being put in from private funds calls to mind the numerous other cases in which similar action has been or is being taken. This fact is of wider importance than may first appear. The lighting of business streets in an adequate manner is justly chargeable to those owning property or doing business on such streets, why may not other matters of an equally public nature such as pavements, be just as properly charged to the same sources? Unquestionably a modern street lighting equipment adds to the business of the merchants on the street, but as surely as it adds to trade, it adds



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to the value of the property, and therefore to the revenues of the city received through taxation.

Furthermore, to increase the value and attractiveness of the business section of a city is to add to the value of the city as a whole. Thus every citizen becomes a participant in the advantages accruing from private enterprise.

Public spirit and private enterprise are by no means antagonistic, and in this particular instance have worked together for good, and the ultimate good that is bound to result from better street lighting is far beyond the mere temporary advantage of the few merchants and others whose foresight has outrun public enterprise.—The Illuminating Engineer.

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It is unquestionably the most exhaustive treatise on the subject of cork insulation yet published, and as such it will prove of interest to engineers, architects, and all who are concerned with refrigeration in any form. The book contains much information never published heretofore, accumulated through years of practical experience. The results of an extensive series of tests to determine the heat transmission of corkboard of various forms, mineral wool block, wood pulp boards, brick, concrete, etc., the results of fire tests, tests of structural strength, tests to determine the efficiency of the bond between corkboard and concrete are given in detail for the first time. Specifications for erecting Nonpareil Corkboard, with drawings covering every standard type of construction, are an important feature and one which should appeal to every architect and engineer who is called upon to handle this kind of work. Service details—the proper thickness of insulation to install, methods of manufacture, factory facilities, shipping weights, freight rates, etc., combine to make the catalogue a reference book of material value. It will be sent to interested persons free of charge.

New Books.

The Cement Record Publishing Company has recently published an interesting book entitled "Brief History of Cements," by I. C. Johnson of Bravesend, England. This is the first time that the true facts regarding the invention of Portland cement have appeared in print. The price of this book is fifty cents per copy postpaid.

Well Known Contractors.

Of the prominent contracting firms in San Francisco, none is better known than Taylor & Johnson, both partners having been identified at one time or another with much important work in San Francisco and the bay cities. Mr. Johnson was formerly superintendent of construction for Maxwell G. Bugbee, well-known San Francisco architect. The Starr-King church at Geary and Franklin streets, the first religious edifice built in San Francisco after the big fire, was erected by Mr. Johnson, while some of the more important work undertaken by the firm of Taylor & Johnson may be mentioned the Security Investment Company's building and the Nelson-Morris Packing house. The firm occupies offices in the Postal Telegraph building.

This half tone shows the Lincoln Building (D. H. Burnham & Co., architects), faced with ***Mat Glazed Brick (semi-enamel)***, made at ***Stockton***, now being sold by the ***Golden Gate Brick Co.***, C. F. Pratt, manager, ***660 Market Street.*** These ***Mat Glazed Brick*** are water proof and will not take stain of any kind. ¶ ***Try them*** as follows: Put quantity of ink on one of them, then apply water and see how nicely they clean.

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Butte Company Manufactures Traveling Hoist.

The Butte Engineering Company has recently taken a contract to build and erect a mammoth electric traveling hoist for the municipal pipeyard of San Francisco. The hoist will handle 32 carloads of pipe daily, having an operating capacity of 350 feet per minute. The big hoist was designed by engineers of the Butte company, and is being turned out at the Butte factory on Howard street. The contract calls for the completion of the hoist in 45 working days at a cost to the city of $2,300.

A New Picture Fastener.

The Star Expansion Bolt Company of 147-149 Cedar street, New York City, makers of the famous Star Expansion bolts, are coming into the limelight again, with a new labor and safety device for hanging pictures and so forth, securely, neatly and in an improved manner.

This product is known as the Sebco Ready Fastener, and consists of a wedge sharpened at one end, having a hole sunk, and threaded at the other. This wedge is driven in flush with the wall, the fixture placed, and a blunt end screw is inserted into the threaded end of the wedge and fastened tight. Whenever it becomes desirable to remove the fastening, the screw is simply taken out, and the wedge being flush with the wall, is not noticed. This product is being sold largely by the better class of picture-frame stores, and by all discriminating hardware dealers.

Rapid Dredging.

The easiest money I ever earned was when I agreed to dredge the ferry slip of the ——— Transportation Company. They were in a bad plight, telegraphing everywhere for a dredger that could be towed up in a hurry; for the river had silted up their landing slip in their busiest season and it meant a thousand dollars a day to them. In the midst of their excitement, I happened into their office and offered to dredge the slip for $500. "Done," said they, and we signed papers on the spot. Then I went out and hired a big tug for five dollars an hour, backed her into the slip, tied her close and fast, and started the engine. In about a minute that big propeller set up such a current that the silt began floating out of the slip in tons. In two hours I called at their office again, left a good cigar, and got my $500.—Benjamin Baker in Scribner's Magazine.

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A Wonderful Clock.

The great clock in the tower of the Metropolitan Life Building in New York City was built and installed with all its accessories, by the Self Winding Clock Company, of which Ferdinand Fish of 250 Montgomery street, San Francisco, is the Pacific Coast representative. The big clock with its four great dials, 346 feet above the sidewalk, is visible far and wide over the city. All the space on the dials not occupied by the bronze work and figures is covered with two-inch squares of a material which resists the weather and gives a minimum of expansion and contraction. The field is white; the center design is of smaller cut pieces, and this, with the larger squares of the border, are a rich turquoise blue. The material is new in this country, but Mart & Lawton, contractors for the dials, say it has been used in a similar way for the Duke of Westminster in England.

The dials are 26 feet 6 inches in diameter, the figures 4 feet high, while the hands built on iron frames and sheathed with copper, will weigh 1,000 pounds for the large hand and 700 pounds for the small. The large hand will measure 17 feet from end to end and 12 feet from center to point, the smaller 13 feet 4 inches over all and 8 feet 4 inches from center to point. They will revolve on roller bearings and, like the numerals on the faces, are illuminated by rows of single filament incandescent lamps behind heavy plate glass.

The clock, with its equipment of bells and light signals, an intricate mechanism, is electrically operated and automatically controlled.

The master clock, which is located in the directors' room on the first floor of the old building, is the heart and soul of the entire tower clock outfit; besides this, it controls about 100 other clocks throughout the entire structure, and also controls several program instruments for sounding various schedules of bells in the different departments. This clock is a high-grade regulator, and is adjusted to run within five seconds per month.

All the controlling devices for the tower clock are set to automatically operate from the master clock. At a predetermined hour in the evening the dials are illuminated; also the lantern and its flashing mechanism is set in operation.

How to Keep Floors From Squeaking.

The noise in floors that squeak in various places when stepped upon is caused by the boards rubbing together. A good remedy, says Popular Mechanics, is to turn in screws through the cracks, as shown in the sketch. This can be done at housecleaning time. The screws will either spread the boards or hold them together so they will not squeak.

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Furnace Heat for the Home.

Furnace heat is used in thousands of homes and its efficiency depends very materially upon the location of the furnace and the proper arrangement of its connections. The heating qualities of a furnace can be determined by the purchaser by the radiating surface above the fire pot. A small fire box with a large radiating surface will give more heat than a large fire box with a small radiating surface and, in addition, will allow of economy in the use of fuel.

Having secured the furnace the most important problem is the selection of its location. It should be placed as near the center of the building as possible so that its distribution of heat will be equitable in all directions. Care should be taken that every piece fits smoothly and that all the joints are packed with asbestos cement. The smoke pipe should be of steel or galvanized iron, and should be the full size of the furnace cellar. The opening in the chimney should have a heavy iron thimble into which the smoke pipe should fit firmly.

The first and second pipe joints, after leaving the furnace, are the joints on which the check damper should be placed. This should have a chain attached, running to the floor above, so that the furnace may be regulated without the necessity of descending to the basement. A similar chain attachment should be made with the front draft of the furnace. Round, three-piece elbows should be used on the hot air pipes. Registers should have frames which will leave an air space between the register box and the woodwork, and if piping touches the woodwork at any point it should have at least three thicknesses of asbestos paper wound around it, and over this should be a strip of tightly fitted tin. The registers, of course, should be as close to the furnace as possible. If these precautions are taken the furnace will do its best service in the heating of the home.

George R. Greenleaf Moves.

George R. Greenleaf, the Berkeley gas and electric fixture man, has moved to larger and more centrally located quarters at 2134 University avenue. In his announcement to customers, Mr. Greenleaf says: "With this change I will be in a much better position to attend to your patronage in a more practical and able manner."

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Our clean, fresh-water Gravel and Sand has been tested and is specified by the leading engineers of the State, and has been used by contractors on some of the largest buildings, bridges, and on oil macadam asphalt macadam and reinforced concrete macadam roads in this State.

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The New Mission Grammar School, San Francisco
L. P. Rixford, City Architect *Kittle Construction Company, Contractors*

The New Mission Grammar School, San Francisco.

THE new Mission Grammar School, on Mission street, below Sixteenth, San Francisco, has been completed, and is a credit to the City Architect's office, as well as to the contractors, embodying, as it does, every desirable feature in design, construction and materials. It is a two-story and basement class A building, with granite base, the upper part being of buff-colored pressed brick, trimmed with terra cotta. The bricks are laid in what is known as the Flemish Bond, and it is no exaggeration to say, that no better looking job of brick work has ever been done in San Francisco.

The building has reinforced concrete floors and roof with a copper covered mansard. There is no unprotected wood in the building, all the window frames, doors and trim being of metal or kalamein work.

Every modern improvement for large school buildings has been provided. Strict attention has been paid to proper ventilation and good light and the school house will undoubtedly rank among the best in the country.

The Kittle Construction Company were the general contractors. The brick work was sub-let to T. F. O'Rourk, mason and builder, who completed his contract in forty working days.

A Snap Buy for Draughtsmen.

Draughtsmen who are looking for a bargain in drawing materials will do well to call on or write the firm of Eugene Dietzgen Co., 18 First street, San Francisco, and order a mechanical drawing set from a limited stock which they have on hand and which were not listed in the new catalog. The regular price for a seven-piece set in pocket book case is $13.50. To close out the stock they are being sold for $6.75. Other sets, in less expensive cases, are sold as low as $5.75. The instruments are high class in every particular and would make a splendid Christmas gift. There are only a few of these sets left.

Busy Year for Engineer Breite.

Engineer W. W. Breite, with offices in the Clunie building, San Francisco, has been called into consultation in designing the steel work for no less than fifty-five buildings since the first of last March. It has been a record breaking year for Mr. Breite which speaks well for his high standing with the members of the architectural profession. The steel plans for some of the largest and best constructed buildings in San Francisco were designed by Mr. Breite. At present he is engaged in converting the Jefferson Square building into a club house for the Western Auto club. A feature of the reconstructed building will be an immense reinforced concrete swimming tank, 35 by 95 feet.

The Star Expansion Bolt Company, makers of the famous Star Expansion Bolts, have moved their New Orleans (La.) sales oce to No. 504 Audubon building, where strangers and friends alike will be welcomed by D. S. Miller.

Enos Company Moves Downtown.

In the building of a new home so many problems confront one that it is a relief to be able to determine one's lighting fixture requirements under such favorable circumstances as is possible at the new downtown studios of The Enos Co.

Instead of being led through a maze of glitter and glass by a more or less incompetent salesman, you are taken into a small room where nothing is on display except the fixtures being suggested for your home. This selection is only made after careful consideration of the requirements of your residence, not only from the architectural and decorative treatment of the surroundings, but with a view of reflecting as far as is possible the personality of the occupant.

The result thus obtained means a degree of marmony between the lighting fixtures and the rest of the decorations, which produces that feeling of rest and peacefulness which is the ideal condition in the truly artistic interior.

Peter August Westberg.

Peter August Westberg, for seven years practicing architect in Los Angeles, died at his Alhambra home October 23d. Mr. Westberg designed and supervised the construction of a number of buildings in Los Angeles and vicinity, including hotels, apartment houses, business blocks and residences. He was fifty-two years of age at the time of his death. He leaves a widow and a son.

A New Invention.

Mr. Charles Hart, the manager of the Hart Heating Company of Oakland, has invented a gas burner which promises to revolutionize the gas heater business.

The new burner, patents for which have been issued in five countries, is arranged with two crossed wires in the bottom of the burner, which divide the flow of gas into four distinct currents, and thoroughly mixes the gas with air when it has reached the outlet of the burner, which is in four prongs, the whole burner being but twelve inches in length.

The inventor has demonstrated by actual tests, that fully eighty per cent of gas is saved to the consumer.

A wooden splinter, held over the outlet, in the blaze, **WILL NOT CATCH ON FIRE;** raised six inches above the outlet, it will light at once.

The Hart Patent Burner is smokeless and sootless; is simple in construction and in operation. It will be sold only with the Hart Combination Hot Water Boiler, and the Queen Gas Water Heater.

The Fire Warden of Oakland says of the new burner:

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A California Made Reversible Window.

Architects are specifying the reversible window more and more as its numerous advantages become apparent. The Dean and the Hipolito windows are manufactured under one and the same patent, the former being turned out in San Francisco and the latter in Los Angeles. The makers have this to say: "This is the modern window. It meets every modern demand for convenience, economy, and the safe-guarding of health and life." As the word "reversible" suggests, the window revolves on a pivot. Both sash may be swung to a horizontal position, or to any angle, or the outside of the sash may be turned inside. The window also slides up and down like the ordinary kind.

"The Hipolito and Dean Reversible Window is a life-saver. It completely eliminates the necessity of the window-cleaner hazarding his life on the outside window ledge. With this window, the cleaner simply revolves the sash, and cleans both sides of the glass from within the building.

"This naturally saves a great deal of time, and consequently increases the window-cleaner's capacity, and decreases the cost of cleaning. It is the experience of building-owners who have installed the reversible windows that a cleaner can handle double the number as of the old sliding variety. This is no inconsiderable matter, for the windows will actually pay for themselves in a few years.

"The reversible window is a health-saver. As the sash can be poised at any angle, the ventilation can be regulated and the draught, usually experienced in opening the ordinary window, can be avoided. Both sash can also be placed at right angles to the frame, and the entire opening used for the free circulation of air. These features are of no small importance when health and comfort are considered."

Burgess Has Money to Loan.

R. N. Burgess & Company has established a San Francisco office in the First National Bank building, at the same time retaining the Oakland office. This firm has considerable money available for building loans and architects who have prospective clients who need money to build with will find it to their advantage to consult with Mr. Burgess. Mention the Architect and Engineer when you talk business with him. R. N. Burgess & Co. will take charge of the construction of the big apartment hotel which is to be erected on Knob Hill from plans by Architects MacDonald and Applegarth.

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Interior of Brode Iron Works, San Francisco

Pioneer San Francisco Iron Works.

The many patrons and friends of R. J. Brode of the Brode & Clark Iron Works, 621-625 Howard street, San Francisco, will be interested in the announcement that he is now sole proprietor of the iron works, having purchased all other interests in the corporation. The concern will hereafter be known as the Brode Iron Works, the corporation having been dissolved.

Mr. Brode is one of San Francisco's pioneer manufacturers of structural steel and ornamental iron work, having spent twenty-three years in the business. His first venture was at Eighth and Clay streets, Oakland, Cal., where he operated a plant for a period of eight years. Upon moving to San Francisco a plant was established at Howard and Beale streets, and a good business was carried on there until about ten years ago, when the present location on Howard street was leased. At the time of the fire the works was practically destroyed but rebuilt and three months later operation was resumed. The main shop has a floor space of 45x164 feet. Employment is given to as many as sixty men. Contracts running as high as 500 tons are filled and care is taken that the work is turned out satisfactory to the

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architect and his client, both in respect to speed and quality of workmanship. In addition to the large floor space, Mr. Brode is fortunate in having a lease on property adjoining the works, which gives him yard space 45x112 feet, and an excellent outlet for transportation purposes on both Tehama and Hawthorne streets.

The Brode & Clark Iron Works were incorporated about fifteen years ago, but very soon after the incorporation the half-interest of W. A. Clark was taken over by Mr. Brode and George G. Bauer. The corporation continued until a few weeks ago, when Mr. Bauer sold his interest. Mr. Brode is a native of Germany, and in the twenty-eight years he has lived in this country he has worked his way up from a mechanic to the ownership of a splendid and most successful enterprise.

The following is a list of some of the more important contracts filled by the Brode & Clark Iron Works in the past few years:

Grand Hotel, corner Turk and Taylor streets, C. A. Meussdorffer architect; Monroe Greenwood Estate Company building, corner Mission street and Shaw alley, Henry A. Schulze architect; Standard Biscuit Company building, Pacific and Sansome streets, S. Schnaittacher architect; building on the south side of Mission street between Third and Fourth streets, Ross & Burgren architects; Englander building, northeast corner Turk and Taylor streets, Ross & Burgren architects; Andrew Downey building, northeast corner Howard and Second streets, Ross & Burgren architects; Russ building, Montgomery, Bush and Pine streets; Donohue building, southwest corner Battery and Pine streets, Ross & Burgren architects; building Broadway and Front streets, Wright, Rushforth & Cahill architects; Sacred Heart Church, Fell and Fillmore streets, Thomas J. Welsh architect; Home Telephone Company's building, Seventeenth street and Albion avenue, Coxhead & Coxhead architects; Barker, Knickerbocker & Bostwick building, northwest corner of Howard and Second streets, Woodworth Wethered architect; torpedo storehouse, United States Government, Fort Winfield Scott, Presidio, and for a great many other buildings, including the Mission High School, Havens & Hoepke architects, which was erected before the fire and was uninjured by the conflagration.

Personal.

Architect William A. Newman has established himself in comfortable offices in the Hewes building at Market and Seventh streets, San Francisco.

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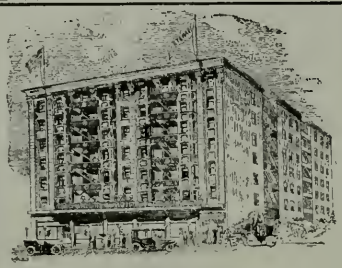

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Praise for Ransome Company.

The Ransome Concrete Company is receiving many flattering compliments from members of the architectural and engineering profession as well as from the layman, for its high-class work as general contractors of the new Sacramento hotel building. The structure has been pronounced the best built reinforced concrete hostelry in the United States. The last number of Cement Age, the leading publication in the East, devoted to the cement interests, speaks very highly of the concrete work on this building. In a future number of The Architect and Engineer the construction of the hotel will be described and illustrated in detail. The Ransome Company has recently taken the contract to erect another large hotel in Sacramento—the reconstruction of the old State House which is almost directly opposite the hostelry just finished by them.

Adds Sprinkler Department

The John G. Sutton Company of San Francisco has added an automatic fire sprinkler department to its business and has placed a competent superintendent in charge of the same. This concern now maintains six important departments in the building construction line and in charge of each is an expert. The departments are: Heating, ventilating, plumbing, electrical work, sheet metal work and automatic sprinkling.

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H. W. BRYSON, Mgr.
WM. McKAY, Supt.

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The Pacific Rolling Mills.

Under the heading, "Made in San Francisco," The Call recently published an account of some of the more important contracts filled by the Pacific Rolling Mills and the following extract from the article will be found of interest:

"The Pacific Rolling Mill Company is the pioneer of all the iron businesses in this city. The president of the concern, P. Noble, has been associated with the business for 40 years and his company will be remembered as the one which for a great many years was located at the foot of Twentieth street, where the Risdon iron and locomotive works is now.

"In the days when the street railroads were being laid in San Francisco old residents will remember the vast quantity of steel rails that were laid and practically every foot of the rails used in the old days was made by the Pacific Rolling Mill Company.

"When steel manufacture began its strides toward the present high standard for building purposes the Pacific Rolling Mill Company branched into that line and was the first to supply structural steel for buildings and bridges in this city.

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London-Paris National Bank building, Mission Savings Bank, corporation yard for the city and county of San Francisco, situated at Bay and Stockton streets, and the San Francisco hospitals now being erected in Potrero avenue between Twenty-second and Twenty-third streets. This latter work will contain about 3,300 tons of structural steel and this job covers more area than any other job of structural steel in the city of San Francisco.

"Besides the structural steel business the Pacific Rolling Mill Company operates a large cast iron foundry in which it specializes on architectural work, such as columns, bases, wheel guards, etc., although it is in a position to manufacture all kinds of cast iron."

Recent Steel Contracts.

The steel contract for the new W. A. Dorn building illustrated elsewhere in this number, was secured by the Western Iron Works of San Francisco which has already begun work on the building at Clay and Davis streets. The steel design is quite intricate. Wright, Rushford & Cahill are the architects.

The Brode Iron Works of San Francisco has secured the steel contract on the loft building that is being erected on Mission near Third street for Archbishop Riordan. Smith O'Brien is the architect.

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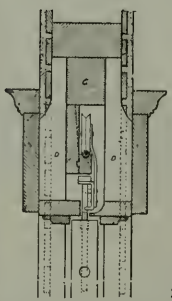

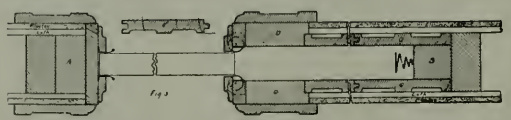

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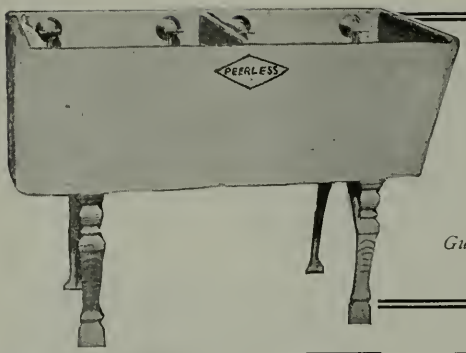

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Sues to Defeat Building Ordinance.

Walter H. Linforth has made application in the Superior Court for a writ of mandate to compel the San Francisco Board of Public Works to give him a permit for the erection of a three-story apartment house at the corner of Washington and Leavenworth streets.

Because of the provisions of ordinance 243, the Board of Public Works claimed that it was illegal for Linforth to erect the apartment house so that it would reach to a height of more than forty-five feet above the curb. Linforth claims that the site of the apartment house is above the level of the street and that it will be impossible to erect a three-story building within that limit. He claims that a recent act of the Legislature annuls the provisions of the ordinance cited.

Amount of Water for Concrete.

The amount of water for a concrete of about the right consistency for reinforced work may be gaged very closely by the amount of cement used. This is a close approximation fit for field work. The weight of the water should equal the weight of the cement. Considering a bag of cement to have a weight of 92 pounds and a cubic foot of water to weigh 62.5 pounds, then for each bag of cement use 1½ cubic feet of water.

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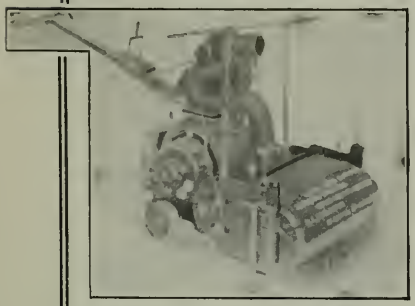

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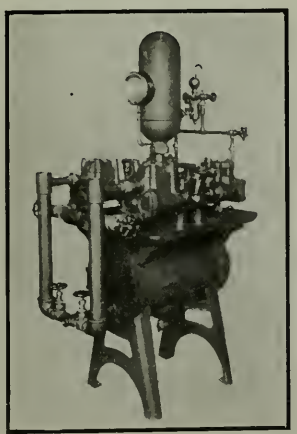

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African Mahogany for White Brothers.

White Brothers, the San Francisco hardwood dealers have recently received from their Petaluma sawmill a schooner load of African mahogany. This was sawed into lumber about a year ago, and being now in perfect condition as to dryness, they are about to place it on the market. This is the first large quantity of African mahogany to be brought into San Francisco. Africa is one of the largest, if not the largest, mahogany producing continent. The trees grow to enormous dimensions and the lumber is magnificently figured. In addition to this, African mahogany is a great deal cheaper than the Mexican variety.

Praise for Mr. Vinson.

Much credit for the success of the recent architectural exhibit at San Francisco is due Mr. M. A. Vinson who proved himself to be a splendid manager with a get-there spirit that exceeded all expectations of his co-workers. Mr. Vinson also managed the publication of the Year Book in a manner that insured the financial success of both the publication and the exhibition. Mr. Vinson is now in Los Angeles, where another book will be published in January in the interests of the southern part of the State and its architects.

Can't Depend on Momentum.

The only direction in which a train will go without motive power is down hill—and at the bottom it will stop.

What would you think of the brains of an engineer who, finding that the train was moving 60 miles an hour, shut off the steam to save coal, and trusted to the train to keep on moving to the end of the line?

Yet there are hundreds of business men, so-called, who attain a high speed, a position of eminence, and then sit back and rest, believing that competition is so far back that it can never catch up.—Journal of Decorative Art.

Brick Wall Caves In.

A peculiar accident occurred recently on the reinforced concrete building at 347 South Los Angeles street, Los Angeles, when the pressure of the third story concrete wall, not yet set, caused a portion of the adjoining brick wall of the Edison annex to give way. The contractors, the Richards-Neustadt Co., after examining the caved-in brick wall, pronounced its construction faulty, stating pressure from the concrete wall was not great enough to affect it if properly built.

Russell & Erwin's New Catalog.

One of the largest and most complete trade catalogs yet called to our attention has just been published by the Russell & Erwin Manufacturing Company of New Britain, Conn. Mr. F. D. Voorhees, Pacific Coast manager, with offices in the Commercial building, San Francisco, has received a few copies of the book and he intends to distribute quite a number to architects on the coast as soon as a substantial shipment has been made from the factory.

Some idea of the size of the catalog may be had from the statement that it contains over 1000 pages with from two to a dozen illustrations on each page. The book treats the different schools of architecture including a brief history of the hardware used in each school. Much valuable information for architects in the way of suggestions, detailed drawings of various styles of hardware and the application of locks and hardware trim, is given and this material will no doubt be appreciated by the profession as it has been compiled at great expense.

A special feature has been made in presenting data to insure a correct application of locks and trim for French and casement windows. Extra pages are provided for the insertion of additional pages as new goods are added. The half tones are beautifully done and the detail of each fixture is brought out with striking clearness. The book is handsomely bound and should prove an ornament as well as a useful acquisition to every office it goes into.

Ruins of Concrete.

At last archaeologists have advanced a reasonable theory regarding the immense ruins in Mexico and Central America which testify to the remarkable achievements of a vanished people, and one likely to be better appreciated in this age of concrete than ever before, says the Springfield (Mass.) Republican.

The new contention is that the great buildings, supposed to have been built of stone, were really created of concrete that was made in molds of gigantic size. Here is an explanation which explains, and also lies within the realm of the possible.

The difficulty that must have attended the transportation of what have been believed to be colossal stone blocks vanishes if they were really made of concrete, for which abundant material was easily obtainable. It is possible that the remote race concerned achieved better concrete construction than we have yet obtained.

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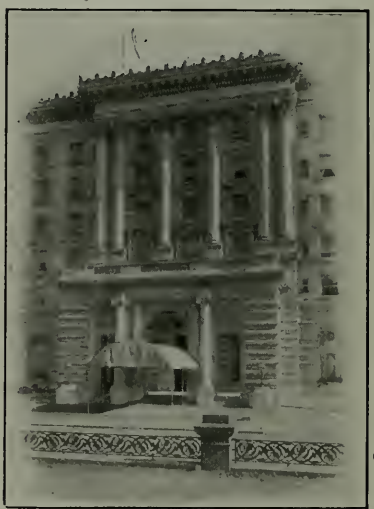

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(From The Clayworker)

UNDER the caption, "Men of Affairs in Los Angeles," the Daily Times of that city pictures Mr. Charles H. Frost, president of the Los Angeles Pressed Brick Company, as a sort of Colossus of Rhodes, as the reader may see from the accompanying production. Mr. Frost has long been an important factor in the building world of the Pacific coast. A decade or more ago he retired from the brick manufacturing business in Chicago and hied himself to Los Angeles in search for health. He found it, and then again engaged in brickmaking, establishing a plant near Los Angeles, which has grown to be one of the largest in the country, and the output of which has gone into many of the largest structures and most beautiful homes of that section.

Notwithstanding the fact that the Los Angeles Pressed Brick Company manufactures many millions of common brick and large quantities of high-grade front brick and terra cotta, including a line of fine enameled brick, Mr. Frost found time, a year or two since, to establish a building brick plant at San Francisco, just to help out the builders of that section.

Of late years Mr. Frost has given considerable attention to brick roadways, and has succeeded in interesting the municipal officers of Los Angeles sufficiently to induce them to lay several miles of brick streets, and these brick roadways are proving so superior to the asphalt, wooden block and similar pavements previously put down that the demand for paving brick now taxes the capacity of that department of their immense plant. Knowing the care and responsibility of managing such an enterprise, the reader may judge that Mr. Frost has lost none of the Chicago spirit, and well deserves to be characterized as one of the leading men of affairs on the Pacific Coast.

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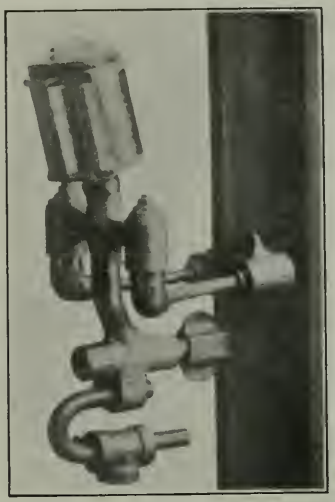

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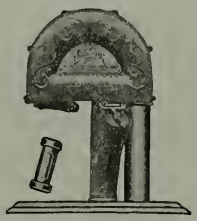

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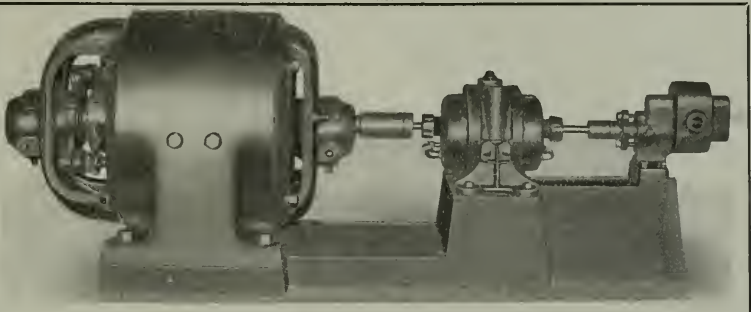

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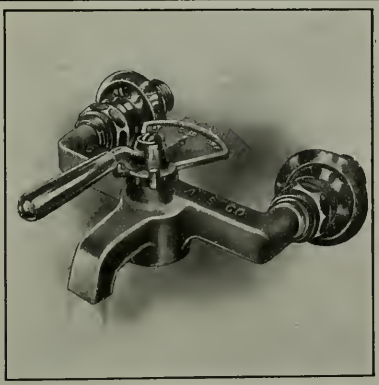

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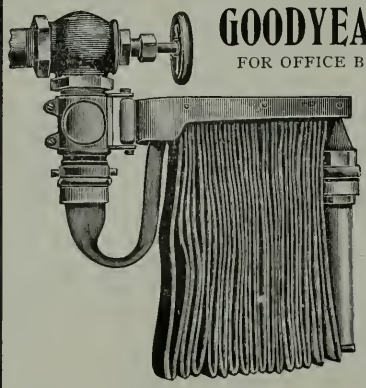

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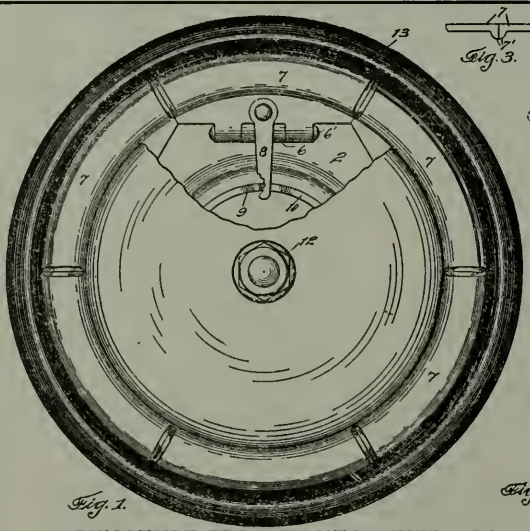

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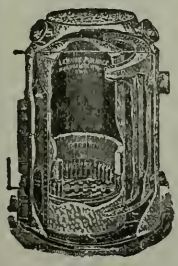

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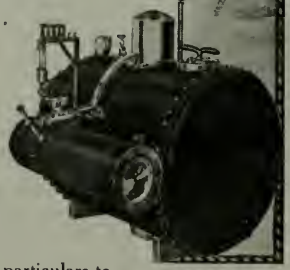

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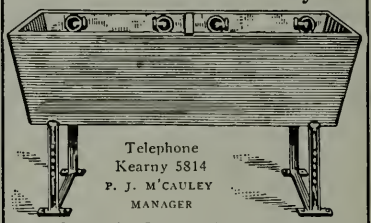

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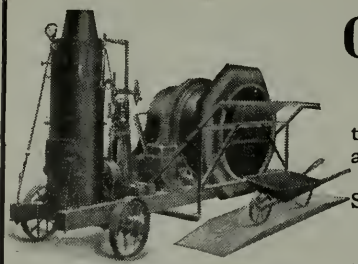

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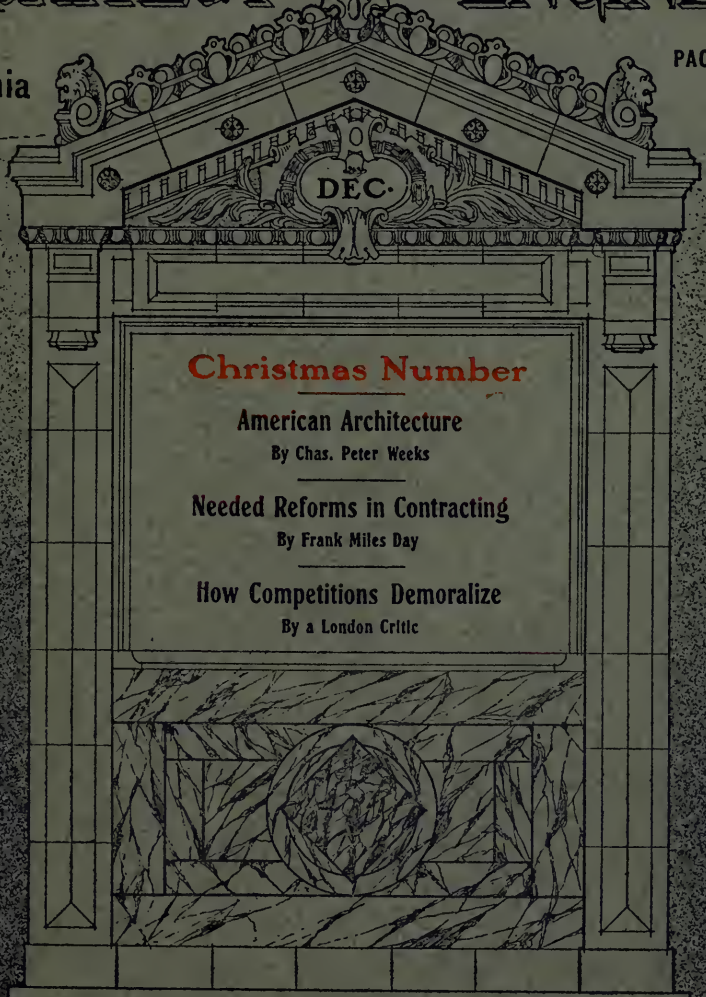

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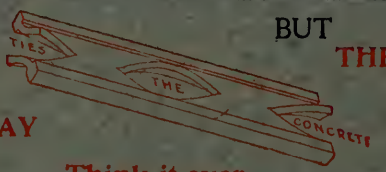

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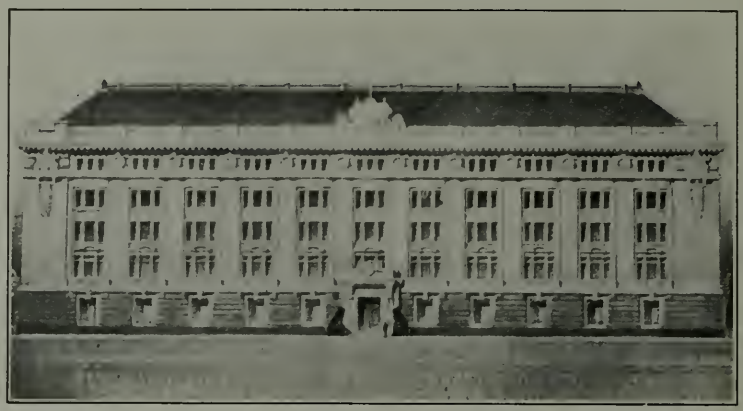

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An Attractive and Artistic Hardwood Interior Need Cost No More than Softwood Trim by the use of our Method.

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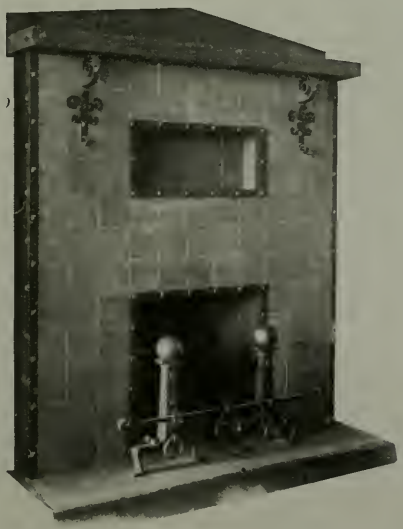

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Pure White and Stainless

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ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see page 117)

ACETYLENE PLANTS
E. D. Bullard.....268 Market St., S. F.

ANCHOR, SCREW EXPANSION
Star Expansion Bolt Co.,
1010 Howard St., S. F.

ARCHITECTURAL AND ORNAMENTAL STEEL AND IRON WORK
Golden Gate Structural & Ornamental Iron Works.....1435 Mission St., S. F.
Vulcan Iron Works...604 Mission St., S. F.
Western Iron Works....125 Beale St., S. F.
Pacific Rolling Mills,
17th and Mississippi Sts., S. F.
Northwest Bridge Works.....Portland, Or.

ARTIFICIAL STONE, SCAGLIOLA, ETC.
California Scagliola Co..68-70 Clara St., S. F.
C. Menzer & Son.....862 Howard St., S. F.
Co-operative Artificial Stone Co.,
Fillmore and Bay Sts., S. F.
Lithic Mfg. Co.,
623 Board of Trade Bldg., Portland

ASBESTOS GOODS
Gillen-Chambers Co., 66 N. Front St., Portland
Pacific Coast Asbestos Co.,
210 Columbia St., Portland
Western Magnesia Asbestos Co.,
Balboa Building, S. F.

ASBESTOS-PROTECTED METAL
P. J. Knudsen Company, Pacific Coast Agents,
310 California St., S. F.

AUTOMATIC FREIGHT ELEVATOR DOORS
Boyd & Moore.....356 Market St., S. F.

BANK FIXTURES
Bank Equipment Co..Monadnock Bldg., S. F.
J. A. M. Johnson.....Monadnock Bldg., S. F.

BELTING, PACKING, ETC.
H. N. Cook Belting Co.,
Fremont and Howard Sts., S. F.
Goodyear Rubber Co....587 Market St., S. F.

BLINDS—VENETIAN
Swedish Venetian Blind Co., Williams & Carter, Pac. Coast Agents,
197 Jessie St., S. F.

BOILERS
Keystone Boiler Works,
Main and Folsom Sts., S. F.
Simonds Machinery Co., 12 Natoma St., S. F.

BOLTS, EXPANSION, TOGGLE, ETC.
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Carnegie Brick and Pottery Co.,
Clunie Bldg., Montg'y and Calif. Sts., S. F.
Los Angeles Pressed Brick Co.,
Frost Bldg., Los Angeles
N. Clark & Son.....17 Spear St., S. F.
Northern Clay Company.....Auburn, Wash.
Pacific Face Brick Co.
401 Commercial Club Bldg., Portland
Pure Clay Brick & Tile Company,
103 Main St., S. F.
Pyrmont Brick Co.....Lincoln, Cal.
Boyd & Moore, agents..356 Market St., S. F.

BRICK MASONS
McGowan & Butler, 332 Builders' Exch., S. F.
Chas. H. Hock....910B Devisadero St., S. F.
Moore & Hardin,
610 Washington St., Vancouver, Wash.
McWhirter & Drake, Builders' Exch., S. F.

BRICK, PORCELAIN & ENAMEL
Boyd & Moore.....356 Market St., S. F.

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Waterproof Flat Brick Stains. Made by Parker, Preston & Co., Inc. Pacific Coast Branch.....Central Building, Los Angeles

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Commercial Bldg., S. F.
United Builders' Supply Co.,
687 Mission St., S. F.

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Albert J. Capron,
Ainsworth Bldg., Portland, Ore.
Waterhouse & Price.....59 Third St., S. F.

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First Nat'l Bank Bldg, S. F.

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2 Franklin Ave., Tenafly, N. J.

CAPITALS, MOLDINGS, ETC.
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McCormick & Henderson,
Postal Telegraph Bldg., S. F.

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Steiger & Kerr Co., Folsom and 18th Sts., S. F.

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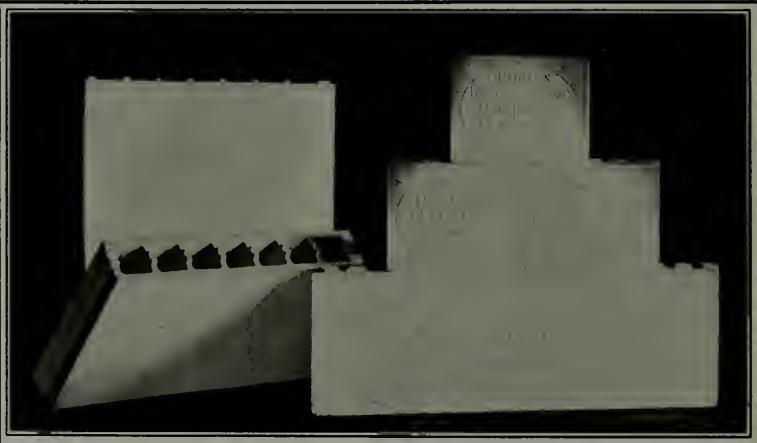

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Imitation Granite Faced Slabs and Blocks
Ornamental Fibrous Plastic Decorations

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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First St. and Broadway, Oakland
Pacific Portland Cement Co.,
Pacific Bldg., S. F.
Western Building Material Co.,
430 California St., S. F.
The Building Material Co., "White Portland,"
587 Monadnock Bldg., S. F.
Balfour, Guthrie & Co.,
San Francisco and Portland
Kerr, Gifford & Co.,
Concord Bldg., Portland, Ore.
Standard Portland Cement Corporation,
Crocker Bldg., S. F.
Boyd & Moore.....356 Market St., S. F.

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Makowski Plaster Block Co.,
Macdonough Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.
Dodds' Interlocking Block Company,
24 California St., S. F.

CEMENT AND PLASTER CONTRACTORS
Callaghan & Manetta...344 Tenth St., S. F.
D. Ross Clarke.....708 Pacific Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.
V. W. Mason.....St. Johns, Ore.
W. N. Whitmore,
3203 E. 17th St., Fruitvale, Cal.

CEMENT EXTERIOR WATERPROOF COATING
Protectorine, Black, White and Colorless,
Boyd & Moore.....356 Market St., S. F
Weatherproof Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branch, Central Building, Los Angeles
Bay State Brick and Cement Coating made by Wadsworth, Howland & Co.
[See distributing agents on page 139]

CEMENT EXTERIOR FINISH
Medusa White Portland Cement, California Agents, The Building Material Co., Inc.....587 Monadnock Bldg., S. F.
"La Fuge" sold by Waterhouse & Price,
59 Third St., S. F.
"Vitrolite" Cold Water Paint, sold by
Boyd & Moore.....356 Market St., S. F.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co.
[See list of distributing agents on page 139]

CEMENT FLOOR COATING
Adamant Cement Floor Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branch....Central Bldg., Los Angeles
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co.
[See list of distributing agents on page 139]

CEMENT TESTS
Robert W. Hunt & Co.,
425 Washington St., S. F.
Pacific Laboratories, Inc.,
558 Market St., S. F.

CHEMICAL ENGINEERS
Robert W. Hunt & Co.,
425 Washington St., S. F.
Pacific Laboratories, Inc.,
558 Market St., S. F.

CHEMICAL ENGINES
Kanawha Chemical Engine Co.,
Charlestown, W. V.

CHIMNEY BUILDERS
Dunlevy & Gettle....79 City Hall Ave., S. F.
Dresser, McDonnell & Co., 39-49 Isis St., S. F.

CHURCH FURNITURE
Spencer Desk Co....Monadnock Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

CLOCKS—SELF-WINDING
Ferdinand Fish, 250 Montgomery St., S. F.

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Bluxome & Co.....5 Front St., S. F.
Foster & Vogt, Builders Exchange,
180 Jessie St., S. F.
A. Lynch & Co.,
314 Builders' Exchange Bldg., S. F.

CONCRETE MIXERS
Beall & Co., Portland, Or.,
Agents Chicago Concrete Mixer
Coltrin Concrete Mixers, N. J. Morehouse, Western Agent, Waterloo, Iowa; J. L. Mery Eng. Co., Monadnock Bldg., S. F.; V. W. Mason, St. Johns, Oregon.
F. T. Crowe & Co.,
Seattle, Tacoma, Spokane and Portland
Chicago Improved Cube Mixer,
Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co., Portland and Seattle.

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Reinforced Concrete Pipe Company,
716 Central Bldg., L. A.
Monadnock Bldg., S. F.

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Clinton Fireproofing System, L. A. Norris,
Monadnock Bldg., S. F.
Corrugated Bars sold by
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Lilley & Thurston Co....82 Second St., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co.,
680 Mission St., S. F.
Arthur Priddle.....133 Geary St., S. F.
Kahn System.....S. F., L. A. and Portland
Twisted Bars sold by
Woods & Huddart....356 Market St., S. F.

CONCRETE SURFACING
"Concreta" sold by W. P. Fuller & Co., S. F.
"Glidden Liquid Cement," sold by
Glidden Varnish Company, Cleveland, O.

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Postal Telegraph Bldg., S. F.
Standard Construction Co.,
Hooker & Lent Bldg., S. F.
Reardon-Crist Co..1166 Webster St., Oakland
W. H. Bagge & Son, Inc., Balboa Bldg., S. F.
Esterley Construction Co.....Berkeley, Cal.
C. A. Brady
Builders' Exchange, S. F. and Menlo Park
Lange & Bergstrom,
Monadnock Bldg., S. F.
Metropolis Construction Co.,
34 California St., S. F.
F. O. Engstrum Co.,
Los Angeles and San Jose, Cal.
Hoyt Bros.,
Builders' Exchange, S. F., and Santa Rosa
P. Peterson.....Fruitvale, Cal.
Louis J. Larson....1231 Chestnut St., Oakland
Ransome Concrete Co....Crocker Bldg., S. F.
Northwest Bridge Works,
Fifteenth and Front Sts., Portland
Redmond, De Luca & Barzellotti,
268 Montgomery St., S. F.
Gutleben Bros..944 Monadnock Bldg., S. F.
Webster-Mace Construction Co.,
Merchants' Exchange Bldg., S. F.
E. D. Crowley Co.,
127 Montgomery St., S. F.
Rickon-Ehrhart Eng. & Const. Co.,
1859 Geary St., S. F.
Wm. A. Butler & Co....660 Market St., S. F.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CORKBOARD INSULATION
Armstrong Cork Co....693 Mission St., S. F.

CORNER BEAD
Boyd & Moore.....356 Market St., S. F.
Parker Corner Metal Bead sold by J. W. Richards.....Metropolis Bank Bldg., S. F.
"Prescott" sold by Boyd & Moore, 356 Market St., S. F.

CORNICES
Chas. S. Amsler.....25 Shotwell St., S. F.

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Boyd & Moore.....356 Market St., S. F.
"Pabco" Damp Proofing Compound sold by Paraffine Paint Co.....38 First St., S. F.
H. D. Samuel Company, 23 Valencia St., S. F.
"Protectorine," Compound, sold by Boyd & Moore .....356 Market St., S. F.

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Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

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Holmes Disappearing Bed Company, 687 Monadnock Bldg., S. F.

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G. Rischmuller.....Builders' Ex., S. F. and 842 37th St., S. F.

DOOR HANGERS
Pitcher Door Hanger sold by Pacific Tank Co.....318 Market St., S. F.
Reliance Hangers.....(see page 147)

DOORS—METAL
Waterhouse & Price.....59 Third St., S. F.
Portland Sheet Metal Works, E. 7th and E. Madison Sts., Portland
"Cross" Fireproof Horizontal Folding Doors, Boyd & Moore.....356 Market St., S. F.

DOORS—REVOLVING
"Van Kannel" Revolving Doors, Boyd & Moore.....356 Market St., S. F.

DOORS—VENEER
Northwest Door Co., Albina Ave., Portland

DRILLS, BRICK AND STONE
Star Expansion Bolt Co., 1010 Howard St., S. F.

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Boyd & Moore.....356 Market St., S. F.

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Central Electric Co..185 Stevenson St., S. F.
Hanbridge-Loyst Electric Co., 77 Sutter St., S. F.

ELECTRICAL CONTRACTORS
Butte Engineering Co..683 Howard St., S. F.
A. C. Thode.....251 Stevenson St., S. F.
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Oregon Engineering Co. Beck Building, Portland, Or.
Latchem Engineering & Electric Co., 214 Ellis St., S. F.

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Van Emon Elevator Co., 54 Natoma St., S. F.
Wells & Spencer Machine Co., 139 Beale St., S. F.

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Boyd & Moore, Agents, 356 Market St., S. F.

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Thos. Morrin.....Balboa Bldg., S. F.
Thos. B. Leonard.....Sheldon Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.
Cox & Vengelen.....229 Pine St., Portland
F. J. Amweg, C. E., 700 Marston Bldg., S. F.

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Elevator Supply & Repair Co., 593 Market St., S. F.

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FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St.,S. F.

FIREPROOF PARTITIONS
Dodds' Interlocking Block Co., 24 California St., S. F.

FIREPROOFING
Roebling Const'n Co..Crocker Bldg., S. F.
San Francisco Fireproofing Company, Collins' system..Metropolis Bank Bldg., S. F.

FIREPROOF FLOORING
Carrelin Asbestos Co.....Sunnyvale, Cal.

FIREPROOF SHUTTERS AND DOORS
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FLOOR POLISH
Butcher's Boston Polish Co.,
356 Atlantic Ave., Boston, Mass.

FLOORING—ENGLISH BLOCK FLOOR
Jas. G. Wilson Mfg. Co.,
3 W. 29th St., New York, and
McCormick-Henderson Co.,
Postal Telegraph Bldg., S. F.

FLOORING COMPOSITION
California Magnesite Co.,
Slauson ave. and Los Angeles
Carrelin Asbestos Flooring Co.,
Sunnyvale, Cal.

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768 Mission St., S. F.
United Glass Co.....115 Turk St., S. F.
W. H. Judson Art Glass Co.
720 S. Broadway, Los Angeles, Cal.
Munich Art Glass Company, Inc.,
667 Mission St., S. F.
San Francisco Art Glass,
944 Mission St., S. F.

GRAVEL, SAND AND CRUSHED ROCK.
L. E. Chattock.....1087 Natoma St., S. F.
Chas. P. Nott..379 Alma St., Palo Alto, Cal.
California Bldg. Material Co.,
Pacific Bldg., S. F.
Leona Chemical Co..1256 Broadway, Oakland
Grant Gravel Co.....87 Third St., S. F.

HARDWOOD AND INLAID FLOORS
Inlaid Floor Co.....398 Eddy St., S. F.
Boyd & Moore.....356 Market St., S. F.

HARDWOOD LUMBER
E. A. Howard Co.....20 Howard St., S. F.
Strable Mfg. Co.
First St., bet. Washington & Clay, Oakland
White Brothers,
Cor. Spear and Howard Sts., S. F.
Dieckmann Hardwood Co., Welch Bldg., S. F.

HARD WALL PLASTER
Regan hard wall plaster,
Mound House, Nev.
Standard Supply Company,
First St. and Broadway, Oakland
Reno Hard Wall Plaster, sold by Western Building Material Co.,
340 Steuart St., S. F.
Adamant Co.....Worcester Bldg., Portland
Nevada Gypsum Hard Wall Plaster Co.,
Pacific Bldg., S. F.

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Ruud Manf'g Co., 428 Sutter St., S. F.; 651 S. Hill St., L. A.; 294 Yamhill St., Portland, Ore.
Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich
Pittsburg Water Heater sold by
Thos. Thieben & Co....585 Mission St., S. F.
John Wood Mfg. Co.,
741 Cypress St., Oakland

HEATING AND VENTILATING
Hart Heater Co.,
State Savings Bank Bldg., Oakland
A. W. Curry.....116 Grand Ave., Portland
Robert Dalziel Jr. Co., 418 13th St., Oakland
California Hydraulic Eng. & Supply Co.,
523 Market St., S. F.
Burness & Martin, 129 Sixteenth St., Portland
T. C. Thronson, 415 Hawthorne Ave., Portland
Thos. E. Hulme & Co., 275 Fifth St., Portland

HEATING AND VENTILATING
C. L. Johnson & Co., 285 Grand Ave., Portland
Machinery and Electrical Co.,
351-353 N. Main St., Los Angeles
Silva Heating & Plumbing Co.,
140 First St., S. F.
Solar Heater Co.,
333 New High St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
John G. Sutton Co., 229 Minna St., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.

HEATING ENGINEERS
Cox & Vengelen, 229 Pine St., Portland, Ore.

HINGES
Stanley's Ball-Bearing Hinges,Stanley Co.,
New Britain, Conn.

HOTELS
Hotel Stewart, Geary, near Powell St., S. F.
Fairmont Hotel,
California and Powell Sts., S. F.

IMITATION HARDWOOD
National Lynwood Company,
310 California St., S. F.

IMITATION STONE
C. Menzer & Son.....862 Howard St., S. F.

INSPECTIONS AND TESTS
Robert W. Hunt & Co.,
425 Washington St., S. F.
Pacific Laboratories, Inc.,
558 Market St., S. F.

INSURANCE
Pacific Surety Co..326 Montgomery St., S. F.
Voss, Conrad & Co..Modnadnock Bldg., S. F.

INTERIOR DECORATING
L. Tozer & Son Co., 228 Grant Ave., S. F.
C. E. Gordon.....1235 Pierce St., S. F.
Schastey & Vollmer..1930 Van Ness Ave., S. F.
W. W. Tucker,
Fourteenth and Webster Sts., Oakland
Pfister & Co.....169 Grove St., S. F.

INSULATION
Union Fibre Co., Winona, Minn.; Coast Agency.....710 Pacific Building, S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.

LAUNDRY TRAYS
Eastern Reinforced Tray Co.,
Eighteenth and Clementina Sts., S. F.
Peerless Mfg Co....364 Eleventh St., S. F.

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The Enos Company..1748 California St., S. F.
Adams & Hollopeter....745 Mission St., S. F.
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Machinery and Electrical Co.,
351 N. Main St., Los Angeles
Steiger & Kerr Stove & Foundry Co.,
Folsom and 18th Sts., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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California Magnesite Co.,
Slauson Ave., Los Angeles

MAILING CASES
Mailing Case Mfg. Co., 264 Natoma St., S. F.

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Mangrum & Otter.....561 Mission St., S. F.
W. W. Montague & Co., 557 Market St., S. F.

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Joseph Musto Sons—Keenan Co.,
535-565 North Point St., S. F.
Italian & American Marble Works,
Sixteenth and Carolina Sts., S. F.
Western Magnesite Development Co.,
Metropolis Bank Bldg., S. F.
Columbia Marble Co., 268 Market St., S. F.
Vermont Marble Works, Brannan St., S. F.
587-591 Market St., S. F.

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Ferdinand Wagner.....607 Waller St., S. F.

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Goodyear Rubber Company,

MECHANICAL ENGINEER
Thomas Morrin.....Balboa Bldg., S. F.

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Vulcan Iron Works....604 Mission St., S. F.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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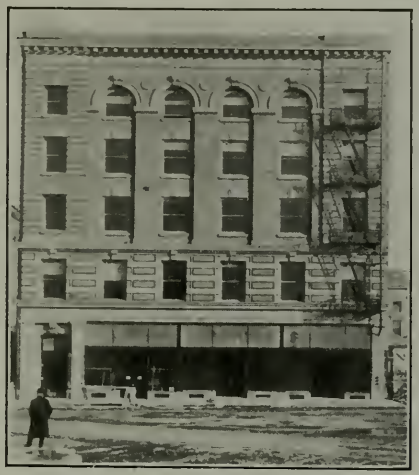

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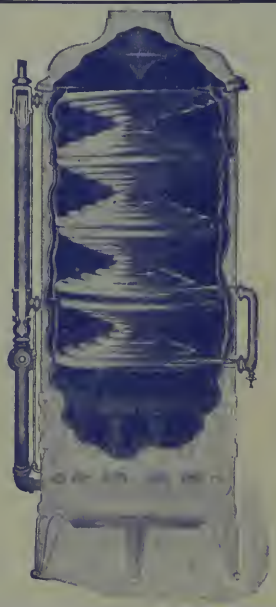

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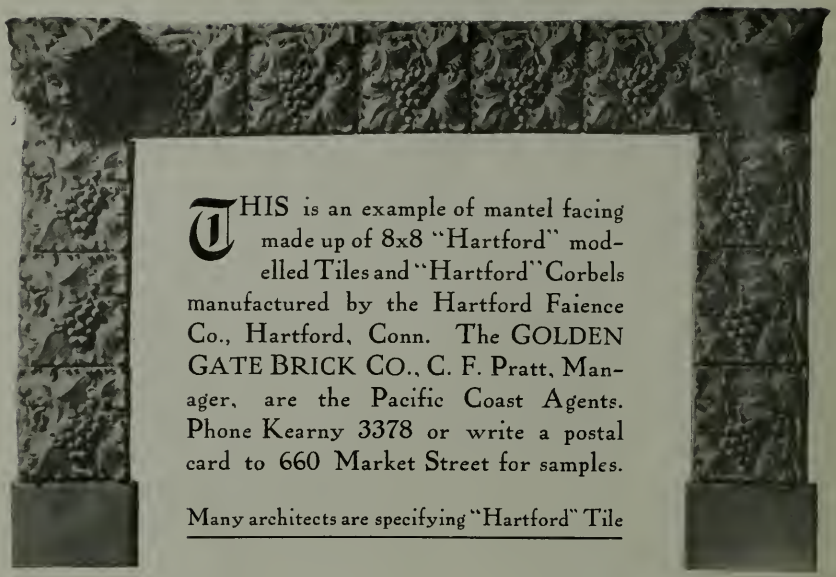

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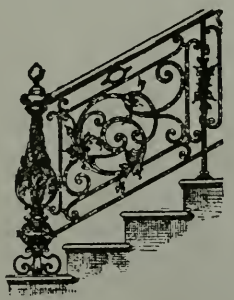

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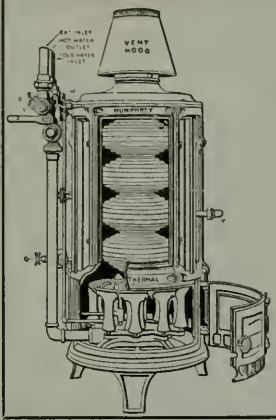

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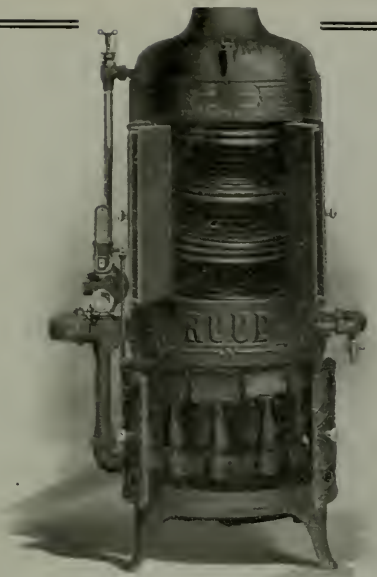

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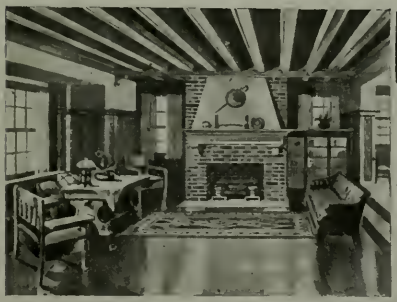

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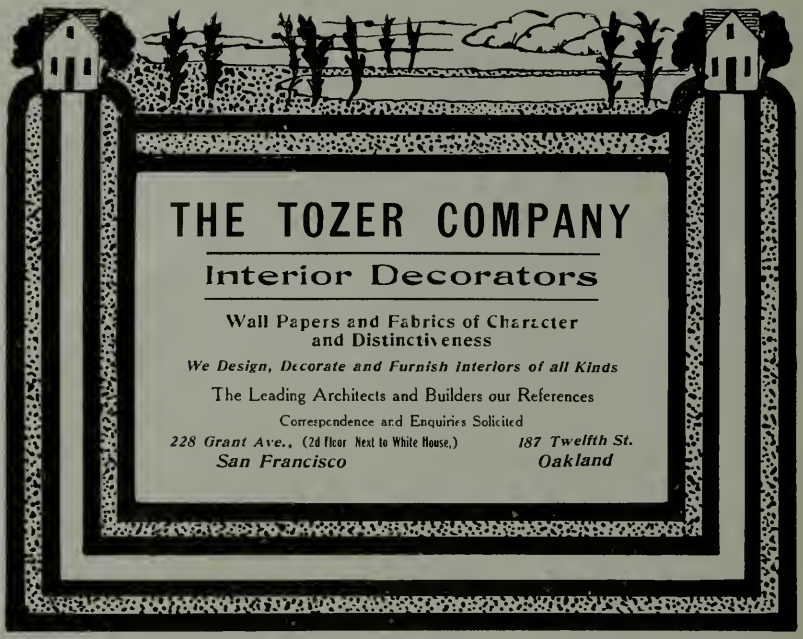
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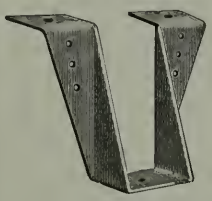

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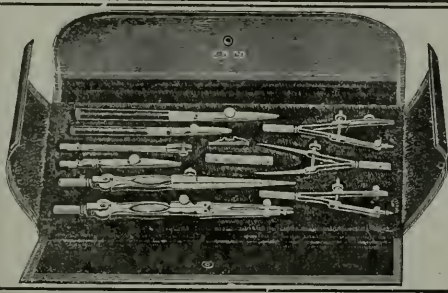

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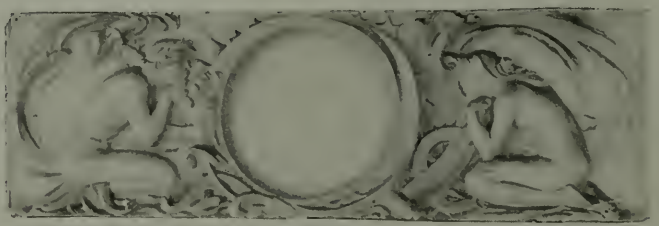

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SKETCH OF FARMERS AND MERCHANTS' SAVINGS BANK BUILDING, OAKLAND, CAL.
Sutton & Weeks, Architects

Frontispiece.
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December, 1909

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THE
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VOL. XIX. DECEMBER, 1909. NO. 2.

American Architecture

By CHARLES PETER WEEKS, Architect.*

That America enjoys a distinct type of architecture—a type demanded by local conditions— is maintained by Mr. Charles Peter Weeks, who recently returned to San Francisco from a six months' stay abroad. Just as the Greeks built Greek architecture, and the Japanese built Japanese architecture so the Americans are building American architecture. But while we are making such splendid progress towards a consistent, harmonious style, Mr. Weeks sounds a note of warning that may well be heeded—he declares we spoil some of our best work by a too familiar knowledge of old world architecture and a consequent tendency to embody as much of that knowledge as possible in our local conceptions. The result is too frequently a disappointment.

In his travels Mr. Weeks photographed more than 200 buildings and a few that are reproduced here serve to illustrate the author's argument that each country, including our own, develops its own peculiar type of architecture, characteristic of its local conditions.—Editor.

Penang Street Scene.

A GENERAL survey of old world architecture teaches a lesson. It teaches the impossibility of copying old world models, and at the same time it demonstrates the intrinsic merit of these models in showing the consistent unity of design in each country and its entire dissimilarity to each other country. The Egyptians built Egyptian architecture; the Greeks built Greek architecture; the Japanese built Japanese architecture. Although they all started from the same source whether it be Assyria or Egypt, yet in the end they developed their own peculiarities, which became characteristics.

We, today, in America are in spite of ourselves doing the same thing, are producing a like result. We are learning to study the architectural idea in the abstract; to know it in such terms as symmetry, proportion, grace, color, harmony, etc., instead of Classic, Renaissance, Egyptian or Gothic.

We have at different times copied a Greek temple for modern usages, and even a few attempts have been made to use the Egyptian temples as models, and the scarcity of these attempts proves the impossibility of looking

*Junior member of the firm of Sutton & Weeks, architects, Mutual Savings Bank Building, San Francisco.

on old world architecture in another way than as models expressing the highest ideas of beauty in the language of the nation that produced them. The great difference in architecture of the old world nations is largely due to the impossibility of close communication between them and thereby the necessity of each nation working out its own salvation without being continually hampered by its neighbors, and only limited by local conditions. We today have our old world knowledge too close at hand, but even with that handicap we are, controlled by local conditions, gradually working out our own architecture.

Bungalow at Penang.

Who can say that we in America have not an architecture of our own? Where in the world will you find structures at all like our best modern buildings? Point out to me a Columbia College Library, a University Club, a West Street building, a Singer building and a Blair building. But the men who designed these splendid structures looked at old world examples symbolically instead of literally.

Even Messrs. McKim, Meade & White, with all their "copying" have, in every case, translated and not built in the original tongue. Mrs. Oelrich's cottage at Newport is a vast improvement over the Grande Trianon.

It is the architect who studies old world architecture literally, instead of copying the spirit of his fellow pioneer that is clogging the wheels of progress towards a consistent, harmonious architecture for America, only differing in different localities due to changed local conditions.

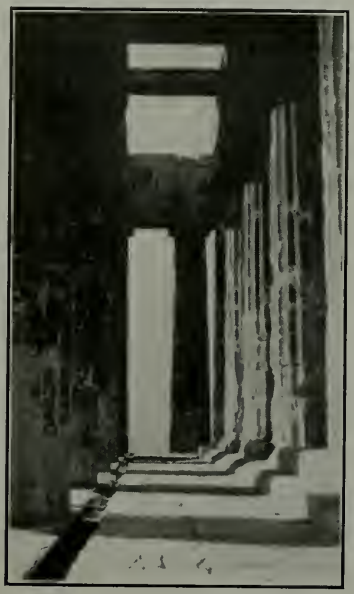
We, however, are committing many crimes. Our all glass first story is one of the greatest, especially here in San Francisco. To appreciate the beauty of many of our buildings, it is necessary to eliminate the first story from our mind and consider the design from the second story up. What an absurdity to build a large classic temple on top of a thin sheet of glass.

Our next serious crime, one which is prevalent throughout the United States, is that of the "stunt artist." His great object in life is to do something different. Not necessarily good, but always different. He is even consistently bad by varying his design even in different rooms of the same buildings. Unfortunately some of our best hotels and residences are examples of the stunt artist's work.

The Plaza Hotel in New York has a fine grille room, but entirely out of key with the building in which it is lodged and quite out of harmony with the adjoining rooms. And nearly all homes have a Dutch room, a Louis XIV room or some other combination equally unhappy. Why make our homes

Erechtheon Temple, Athens, Greece.

Temple of Luxor, Egypt.



Portico of the Parthenon, Athens, Greece.

Court in Chinese Temple, Canton, China

and hotels archaeological museums? Is a house so big that one kind of architecture palls on the taste? St. Peters at Rome would make a fine, dignified picture with side chapels in Dutch, L'Art Nouveau, Japanese and French Renaissance.

It is also characteristic of us to love the imported—made in Germany, fabricated in Paris, or designed in London—and we thereby nip in the bud the growing local character that tends to produce an harmonious local work of art.

Bungalo, Colombo, Ceylon.

The absurdity of this is shown by two recent examples — the Episcopal Cathedral designed in England had to be practically redesigned upon arrival of the plans in San Francisco. A palatial hostelry was designed for Oakland by one of New York's best known hotel architects. Ultimately the design was turned over to a local firm to make fit home conditions. All of this means that we have local conditions which influence our design, whether we want them to or not, and in the end will give us a local architecture in spite of ourselves, which is just what has happened to all localities of the world that have produced real art.

Japanese Temple at Kyoto.

Doorway, Chinese Temple, Canton, China.

To do good work a designer must be on the spot. He must learn the language of the native, and that language refined and beautified by careful study of the best that the past has furnished, in proportion, detail and color, in countries similar to our own, will give us locally an architecture that future generations will come to study as we go to Rome.

External color treatment had been almost entirely overlooked in this country until just recently. It deserves a great deal of study. The beauty of present European and Asiatic architecture is due to a great extent to its color harmony. And we may be sure that the ancients were lavish in color treatment as the museums prove.

But we have studied photographs and line drawings so much that the idea of color seems to have escaped us. Greece in some of her modern buildings has followed her ancient leaders both in design and color. The Library, the Museum, the Academy at Athens, are pure Greek classic and colored as did the ancients. The color application, however, has not been a success in this case, as it is coming off very fast.

Color is one of the important elements in Japanese and Chinese Architecture. The old temples are brown wood with thatched roofs, but even these have the ends of beams, etc., painted white. The more recent ones are lavish in red lacquers, black roof and metal trimmings and some parts are plaster and half timber work.

Photographs are not only inadequate to show color, but to give the true idea of proportion and scale.

My idea of Japanese architecture from photographs was that "cute little bungalow" described it. But "monumental in plan, gorgeous in color, wealthy in detail and with all charmingly set about with formal and informal gardening"

Approach to the Sphinx

Apartment Hotel for the Sheridan-Proctor Company, San Francisco
Sutton & Weeks, Architects.

are expressions that are nearer the truth. It is surprising that people so intricate in their workmanship should be so grand in their conception.

Egypt, too, has things to tell to the eye that are kept secret from the camera. What photograph can give the feeling of immensity and ponderousness that one has from the inside of the great pyramid, and how the soul shrivels up with the sickening sensation of one who has been tricked by his best beloved dream, at the sight of the poor disfigured old sphynx, sunken in a hole surrounded by sand, sunken into insignificance by this big pyramid one has to pass to get to it!

But how stupendous is Karnack! How could one dream a vast temple planned like this in a hot desolate desert? On the other hand, Greece has a surprise that its photograph does not tell in the smallness of her architectural scale. Some temples, of course, are big but not so ponderous as the photographs show, and again some of them like Nika and the Erechtheium and Lysicrates, are charmingly small in scale. So dainty, such perfect details and yet exceedingly dignified!

It is with a shock one sees the ravages that war, time and the museum maker has created in Greece; the powder magazine that blew the Pantheon into a few scattered details and Lord Elgin's replaced clay caryatid in the Enytheon which has turned black to mourn for the one that was stolen for the British Museum. How one longs when on the Accropolis to have all the museums that have robbed this mountain of beauty of its treasures, disgorge and help the Greek archaeologist restore it to its former self. Rebuild the Partheon, complete the reconstruction of the Propyle and repair the Erechtheium, and make of Athens an architectural shrine where pilgrims from all lands will go to worship as they go now to the Stadium to witness the Olympic games.

Design for an Apartment House, Seattle, Wash.

Graham & Myers, Architects.

Sketch for a Hotel.

Design for a Public Building.

An Appreciation of Architect F. W. Fitzpatrick

By W. TALMADGE MILLER.

Readers of the Architect and Engineer are familiar with Mr. Fitzpatrick's written and forceful contributions to these columns, but some of them may not be so well acquainted with his work as a designer. In the latter line he has but few equals, while as an architectural water colorist it is doubtful if he has any equal. We have heard unfavorable criticism of his practice in that through his assistance architects were enabled to compete with and excel others more able undoubtedly than they. This seems silly to us. These days results are what people demand. What are the odds whether a man can produce them personally or through a permanent partner, a skilled assistant or as in the case in point, through a special association with one accustomed to producing the very best results?

We are glad therefore to have the opportunity of publishing Mr. Miller's "Appreciation" of Mr. Fitzpatrick's work. Naturally, much of that work is confidential, but we have been enabled to illustrate this paper with a few drawings by him of designs made in known association with others.—Editor.

THAT Architecture has been commercialized during the past few years is universally conceded. Is it a detrimental change or not is another matter. It can still be artistic, but it is an artistic element applied on a business basis. Medicine, religion, law, all have been similarly revamped to conform to our practical, business-like views. And mayhap the world has not suffered so very much by the change after all.

The old time architect was first of all an artist; the practical utilities of his building, its construction, its cost and all else were of minor importance and subordinated to a beautiful exterior and to academically correct details. Today our architects are learning that the use of the building, its purpose, is of primal importance, that its cost is also a vital item, and business considerations have their full weight as well as the artistic. Indeed, the generally accepted idea of true Art is that it should take care of all those things artistically, and not be merely a dream to which the

An Attractive Bank Building.

realities have to be whipped into a species of conformity. Similarly, business methods have crept into architects' offices, these are no longer "ateliers," studios filled with long-haired dreamers and tobacco smoke, but systemized business institutions where skilled specialists go about their work methodically, thoroughly, albeit it can also be done artistically.

It has been recognized that the architect himself need not necessarily be a great artist. If he is a good executive it will be better for the building, the client and his own welfare. The artistic element can be infused as a

branch of the office work, as can the engineering features, a specialization. If the artist—the designer, is an employee, well and good; if he be a member of the firm, so much the better. But the trouble is as it has always been that the clever designers, the real architects, are lamentably few and far between, while the architectural offices are distressingly numerous. Therefore, many of the latter have to get along without the former. Yet, the general public is becoming discriminating, it is growing appreciative of artistic buildings, demands them and insists upon having them though, unfortunately, its demands are far from being always complied with!

* * *

Years ago one man at least clearly foresaw all this and established a service to meet the demand. He called the new specialization or profession "Consulting-Architect" and for all I know, is still its only practitioner.

Commercial and Office Building.

Design for a Bank.

Oftentimes we hear of a practicing architect of a larger city, an older man being associated as a "Consulting Architect" with a young man entrusted with important work in a smaller city, but so far I believe that Mr. F. W. Fitzpatrick of Washington, D. C. is the only exclusively Consulting Architect in the country. He made an enviable reputation first as a practicing architect in the West, a Federal Government architect and a designer of the highest caliber before giving his whole attention to this new branch of exclusive "Consultation," so that he was no unknown quantity or experimentor. He went into it convinced that it gave the largest possible field for his talents. And it did. No man in the country or probably in the world is called upon to solve as many and as complex Architectural problems as is he. Our biggest offices turn out a surprising lot of buildings, but all these plans have to be worked out, detailed and worried over, each building is actively on the boards, as it were, for a year or more; in his case he does the preliminary studying, the actual designing, the scheming-out of the plan in rough sketches and the exterior either in rough form for the practicing architect to work out, or in a colored perspective ready to show the clients. Most of his exterior work is done directly in perspective and those pictures have every appearance of finished and most careful

An Up-to-date-Fire House.

Sketch for a Cathedral.

Comfortable and Luxurious.

work, accurate representations of what the completed structures will look like, surroundings that people will recognize, life and city stir about them, the daintiest of architectural pictures, works of art, drawings that the very best judges have pronounced equal, if not superior, to anything that has been done in that line. They list our best known architectural illustrators in the order of excellence with Fitzpatrick first, then Guerin, Hawley and Enders.

Yet his facility, capacity for work and ready grasp of possibilities are such that he rarely has to give more than two or three days to any one building, and I have known him to reel out as many as nine, and not unimportant ones either, in a week. The big office that does twenty as important buildings in a year is busy indeed.

The amount of personal work he does is simply phenomenal, an average of over two hundred projects studied and designed every year. Yet he never gives the impression of being rushed, he works systematically and long hours, but with several hours a day of vigorous physical exercise crowded in, boxing, tennis, fencing and cross-country riding are his favorite sports and he does them as well as he does his work, his writing

An Ornament to Any City

and the many "side-hobbies" he has, such as inaugurating or participating in the fire-prevention movement, the "City-Beautiful" plans, etc. Physically abnormally strong, his life is so regular and well managed that this work and strain that would kill the average man, agree with him so perfectly that he never feels the need of or takes a vacation, claiming that five hours sound sleep and three hours of violent exercise every day constitute vacation enough for any man.

Some might think that this enforced hasty work would suffer in quality. On the contrary, his very best is spontaneous. He abhors the term "inspiration," but he must be "inspired," for it hardly seems possible for one man to do all he does and so well. Nothing in his compositions is unstudied or accidental.

His architect-clients are from every city, and not only in this country, but in Canada and in Mexico, and of late he has done much foreign work, even in remote Australia. They come to him in perfect confidence and that they always get the very best and are satisfied is evidenced by the fact

that those who came to him years ago still turn over their important work to him. He is a good deal like a father-confessor to the profession. He knows their troubles and difficulties and is liberal in his help and every man realizes that his secrets are safe in "Fitz's" keeping.

Only lately has there developed antagonism to this man who has been so universally loved and who has done so much for the advancement of our National Art. It has undoubtedly originated in the ranks of the "big" architects. First Mr. Fitzpatrick was indirectly attacked in the English journals and those veiled attacks were then repeated here and enlarged upon, always covert, but nevertheless aimed most emphatically in his direction. The reason is evident enough. All the big work does not go to the few "big" men who have established big clientèles. Yet that which escapes them is well done. People find that there is just as much and more satisfaction in dealing with a local architect in good standing as there is in employing a big name from New York, for instance, and the resultant buildings are in many cases handsomer, more artistic than the work of those big men. The latter realize that in great measure this is owing to Fitzpatrick's association with local men, they recognize his handiwork and therefore look upon him as a dangerous rival, a man who is helping other men to prominence, to doing as well as themselves, the great ones, and these therefore resort to various expedients to efface this, as it seems to them "harmful" competition. The situation is not without its humor however, in that when sore pressed or puzzled or having a specially difficult problem to solve he is the very man they turn to for expert advice!

His practice is safely established, whatever Envy and Jealousy and the Trust Spirit may say and do. It is on broad lines, it is helpful to the many, it has contributed tremendously to a truer appreciation of the Art Architectural in this country and Mr. Fitzpatrick merits all the success and the results and benefits he has achieved as well as the gratitude not only of his architect-clients, but of the profession, yes, the nation as a whole.

* * *

A Budding Napoleon

Youthful Capitalist (aged seven)—Doing any good?

His Partner (aged eight)—Naw; I don't seem t' be able t' place this lemminade.

"Jimmy Jones selling any pop?"

"He's gettin' rich—took in fifty cents since noon."

"What's our assets?"

"Chair, table an' tumbler, belongin' t' your maw; bucket an' dipper, property of my maw; two gallons of sweetened water an' one lemon, wid de groceryman makin' bad talk about de fifteen cents we owe 'im—I tells yer, we're on de ragged edge of bustt."

"Any outstanding contracts?"

"Me brudder said he'd buy a drink, t'morrer if de Yaller Legs win."

"Good! I'll tell you what we'll do. We'll form a new company, take over this stand, merge Jimmy's, get out a prospectus and circulate it all around de street, issue bonds on the equipment, capitalize the indebtedness, issue $1 stock, half-preferred, and—"

"Den what?"

"Sell the stock to Jimmy."

"Shucks! Jimmy ain't such a darn fool as to bite at dat kind er bait."

"Ain't he? You just watch me hypnotize him!"

And it was even so, and the next day Jimmy woke up. They all do.—Puck.

The Law Regulating the Practice of Architecture*

By ROBERT MORGENEIER, Architect and Engineer.

VII. Building Contracts, Surety Bonds and Superintendency.

FOR the sake of brevity, I assume that both the owner and the contractor are competent to enter into a contract. For detailed information upon what constitutes such competency the reader can readily examine the authorities under the headings, "Law of Contracts" and "Contract Stipulations," and in further exploration consult the statutes and reported cases. At present we will note the formalities to be observed and the points to be covered in writing, after notice of acceptance of bid has been sent to and received by the successful bidder. Such notice of acceptance shall in all cases, both of public and of private work, be given in writing, and substantially as follows, viz.: "Your bid, under date of ....., 1909, duly opened ....., 1909, and offering to (here state work offered to be done), for the sum (here state the amount of the bid), is hereby accepted. You are further requested to present for examination and approval surety bonds in the sum of (here state amount of bonds), and personally appear at (here state place, day and hour of meeting), to enter into a contract agreeable to the terms and conditions under which your said accepted bid was submitted.

"(Signed).....

Upon the meeting of the parties there shall be on hand, in addition to the approved bonds of the contractor, three numbered sets of the drawings, three corrected and approved sets of specifications, and, also in triplicate, the building contract proper.

This contract shall, in every instance, at least cover the following declarations, stipulations and agreements, to wit:

1st. Heading, "Building Contract."

2d. Day, month and year when made and entered into.

3d. Name of owner, as first party, and his place of residence in city, county and State.

4th. Name of contractor and his place of residence in city, county and State, as second party.

5th. Stipulation that the parties thereto shall be designated as "owner" and as "contractor," singular numbers only to be used, and that the word "architect" refers to the architect whose name appears upon the drawings in writing, printing, and embossing by means of a seal, and further that the word "architect" shall include both the singular and the plural and the masculine and the feminine.

6th. Agreement by the contractor that he will complete the work in a specified number of working days, viz.: consecutive days, excepting Sundays and legal holidays.

7th. Declaration of what plans, specifications and detail drawings show the work to be done, the number of sheets, and by whom made for the owner.

8th. That architect shall furnish additional detailed drawings in explanation and amplification of the adopted general arrangement plans.

8tha. Binds the architect to fairly detail and construe anything not clear to contractor.

9th. That time lost to the contractor because of the acts or neglect

*Conclusion of a series of seven articles on "The Law Regulating the Practice of Architecture." Mr. Morgeneier's business address is 30 Telegraph Avenue, Oakland.

School for Sonora, Cal. N. W. Sexton, Architect

of the owner, his agents or employees, by act of God, including inclement weather, by differences with his laborers or by strikes, shall not be chargeable against him.

10th. General description of building and exact proposed location of same.

11th. Agreement by owner, in consideration of the performance of agreement by contractor, to pay said contractor certain stipulated sums.

12th. Time of payment to follow immediately the performance of specified extent of work (or percentages of entire work done upon which specified percentages of payment shall become due the contractor).

13th. Obligation of architect to deliver certificates to contractor, entitling him to payments from owner.

14th. Specific relief for contractor if architect fails or neglects to issue certificate to contractor.

15th. Defines owner's liability if he fails to pay contractor.

16th. Declaration that title, general conditions, specifications and all drawings are part of this contract, and stipulation that they shall be so construed.

17th. Stipulation covering possible future changes of plans, and that the architect can appoint representatives and assistants.

18th. Stipulation that all work not shown and described, but which the very nature of any design or utility makes a necessary part, even though not shown or described, shall be considered as so shown and described.

18tha. That parts neither shown nor described, and which might be dispensed with, shall, if done or furnished by the contractor on the orders of the architect, be held to be new work not covered by this contract.

19th. Mutual agreement to submit to arbitration, any question, except the contract price and terms of payment, upon which the owner, contractor and architect cannot reach an agreement.

20th. Provide a penalty if contractor fails to complete the building within the specified time, and provides a bonus to the contractor if building is completed before the time specified.

21st. Determines proportioning of loss between owner and contractor, in case of fire, flood or earthquake, etc.

22d. Payments not to constitute evidence of acceptance of any or the entire work.

23d. Stipulation that architect shall continue work, if abandoned by contractor.

24th. Contractor declares that he has examined all plans and specifications, understands them, certifies to their sufficiency and declares that he will execute them in full, without extra pay, except as specifically provided.

25th. Signatures and seals of parties.

In the California practice the above twenty-five essentials have been assimilated, more or less, and quite generally adopted. Of printed forms, "Hardy's" No. 510 and "Crocker's" Form A No. 468 contains them in workable shape, and the architect should have one or the other form before him when framing any contract, being careful that such contract be bi-lateral only, but with all the powers and rights of a referee reserved to the architect.

To further join the plans and documents and additional to the cross-references contained in the same, the owner and contractor shall each sign his name to every sheet of drawings and all blue prints. Such signa-

tures to be written with ink upon the face of said drawings and blue prints.

Filing of Public Record.

Immediately the signatures are attached one copy of the plans, specifications, and contract shall be filed, at the County Recorder's office, City Clerk's or Town Clerk's office, whatsoever may be the proper place of record for the particular case. Outside of the architect's residential county his certificate shall be placed on file with the Clerk of the county in which the building is to be erected, and in each case a registration fee of $5 must be paid, this in addition to the filing fees.

No work shall be done by the contractor or his agents upon the building site before contract is completed as above.

Contracts for less than $1,000 need not be filed, to make them valid, but any contract of that or a greater amount must be filed. See Willamette S. M. Co. versus Los Angeles C. Co., Calif. 49, Pacific Reports, 629, 1892; Schweisau versus McMahon, Calif. 42, Pacific Reports, 1065, etc.

Security Bonds.

The purpose of a bond is to guarantee the owner against loss because of any breach of contract on part of the contractor, hence the bond must be in a sufficient amount and issue from a financially reliable source.

It must also be correctly drawn and worded. Bonds are of two kinds, viz.: personal and corporate surety. The latter has, for good and sufficient reasons, practically superceded the "personal bond."

A personal bond is that given by some friend of the contractor. It is given as a matter of accommodation. It is supposed that such bondsman has property sufficient to protect the owner in case of loss due to the fault of the contractor, but the owner has no hold upon such property until a loss actually occurs. In the meantime the bondsman may dispose of or secrete his property. On the other hand, a corporate security bond is issued on a purely business basis, the contractor paying a premium, and also showing such surety company that he has property of his own and is otherwise responsible.

A surety company makes provisions to meet its losses. Judge MacPherson, of the United States Court, Eastern Dist., Pa., has recently reviewed this question so thoroughly that it may be well to repeat it here. The learned jurist, in part, says:

"The individual surety as formerly known was usually a relative or friend who had confidence in the principal, and voluntarily assumed the obligation of answering for the latter's faithful performance of duty. I need not speak of the individual who became surety for pay, for the very name 'professional bailgoer' is a reproach to every branch of the administration of justice which he was allowed to contaminate with his presence.

"But the voluntary surety, however honest and well qualified at the time of his approval by the court is liable to the contingencies of business, the changes of value in property, and the inexorable chance of death, which brings his estate into the administration of the law under wholly changed circumstances.

"Of the happening of any of these contingencies the only person in position to keep close watch is the principal, and his interest is averse to making known any doubt as to the sufficiency of his friend, or to assuming the burden of finding a new surety. These are some of the disadvantages even of an honest surety, and if we add to them the risk of a dishonest one, who may dispose of his property on his own scent of danger

or on a friendly hint from his principal, we may have a fair idea of the dangers of which our reports present many illustrations.

"On the other hand, the surety company must have a capital, the amount, nature of investment and management of which are known, is at all times subject to visitorial power, and finally, it has the sharp incentive of prevention of loss by looking closely after the administration of his trust by its principal for whom it has become responsible, not from friendly personal confidence, but as a strict business venture.

" 'Corporation suretyship is another product of modern thought and ingenuity, and may be said to possess many advantages over individual bail or security. . . . Our daily experience has proved that corporate security and the oversight and management by expert officers of the trust and security companies are highly advantageous not only to the fiduciary, but to all the parties interested, whether creditors, legatees or distributees.' "

Accepting a bonding company as bailee offering the greatest security to the owner, there then remains the question of the amount of security which shall thoroughly protect the owner.

It should never be excessive, for in the end the owner pays the premiums, viz.: in estimating the cost the contractor takes into account the cost of his bonds and adds this amount to his bid.

In no case should the general bond be greater than 50 per cent of the contract amount, and when payments are so stipulated that 50 per cent of the amount to be paid is still in the hands of the owner at the time he is to accept the finished building, and of this 25 per cent is to be paid thirty-five days after acceptance of the building by him, then a bond equalling 25 per cent of the contract price will be sufficient.

Where the architect is competent and superintends the work a contractor cannot default to the extent of 20 per cent without early detection, when steps can be taken to avoid a loss.

It has become a practice to ask a 25 per cent bond to secure the payment of materials entering into the construction of a building.

The cost of both bonds is more than offset by the assurance against loss, and, furthermore, a contractor able to furnish bonds is certainly himself more responsible than one who cannot. The architect should be satisfied of the commercial standing of the bonding company offering their surety and see to it that the bonds of different companies run concurrent and are technically correct.

Fire and Casualty Insurance.

For the protection of owner and contractors these two assurances should be acquired, the premiums of which are quite nominal, the first being at a low rate for the work as it goes up, the second is based upon the monthly pay of labor employed, and the premiums are properly chargeable to the contractor.

In regard to the obligations of an owner toward a bonding company, it may be said that the first and most important of these is his duty to notify such company, without delay, of any default on part of the contractor. And it is the duty of the architect superintending the work to so notify the bailees, upon his own initiative, and if he fails to do so is properly amenable to the owner.

Superintendency.

Superintendency on part of an architect consists in that attention, council, advice and orders which shall be found by him necessary to insure

Landry C. Babin Building, San Francisca
Crim & Scott, Architects

the construction of a building in conformity with the plans previously prepared by him.

This attention, etc., he may personally perform, or he may appoint a competent superintendent to take his place. If the work is extensive he may appoint inspectors of materials, engineers, clerks and overseers, retaining only the general supervision of the work.

The owner should understand that the architect is not a sort of foreman whose business is to personally and possibly daily direct the building operations. Under the law, and the ethics of his profession, he is held responsible for the sufficiency of his plans, and, condensed to a sentence, he is to see to it that his plans are carried out, within the limits of the contract price, and in conformity with the law regulating building operations.

In pursuance of this obligation then he will be present or represented by one who is his equal professionally when the foundations are laid out and the various first levels fixed, and thereafter at every important epoch. Before each craft takes up its work he will have his details ready; in fact, he will anticipate their entry, so that the work will not be delayed. He will give early notice to the various inspectors, and in every way facilitate inspections; he will pass upon the quality and finish of all visible parts and of every item of utility or embellishment; he will promptly and intelligently co-operate with the contractor in all things, and in case of default by the latter will serve written notice on the sureties. Take over and complete the work left unfinished by a contractor, and, having in view the rights and equities of both parties, issue certificates for payments to the contractor, and, upon completion of the job, he should know approximately what the total expenditures were and how much is still unpaid. If he has contracted to audit the contractor's bills this knowledge is readily obtained. If not, material men and sub-contractors will gladly furnish it.

All notices and orders shall be in writing, and upon acceptance of the building by owner such acceptance shall at once be published in the nearest newspaper. If at a county seat, then in an "official paper." The form of such notice is provided by statute in California, as well as in other States. If superintendency requires the architect to travel outside of his place of residence his contract with the owner should provide for the payment of his mileage and per diem expense, in addition to a fixed compensation for each and every trip to be made.

If no understanding on this point exists then the prospect for trouble is open. The owner will probably demand an unreasonable number of visits and the architect will attempt to minimize them. At all events, if the owner knows that he must pay for every trip made by his architect he will not insist upon them unnecessarily.

Of trips, expenses and services additional to a contracted percentage of the costs the architect shall keep an itemized account and render same to the owner once a month.

If the "General Conditions of the Contract" contain the word "architect," or if the drawings are marked as coming from an architect, by having such word follow the name of any person or persons, it is assumed, under the law of California, that such "architect" is duly certificated to practice in the State, and if it should prove otherwise such person or persons are liable to prosecution and a fine of $50 to $500.

Also, a non-certified architect cannot by process of law collect a bill for services covering architectural superintendency performed by him. It should be well understood by private parties, and public officials, as well,

that if they engage the services as architect of one not licensed to practice architecture, that the word "architect" shall not appear on the drawings nor in any part of the specifications or contract.

The unauthorized use of the term "architect" in a building contract or upon the drawings forming part of such contract will, under a test at law, certainly void such contract. It is not usual to exact a guarantee of sufficiency of plans and specifictions from a contractor, for the very good reason that many architects allow a contractor to begin operations upon insufficient and incomplete plans. If, however, the plans, etc., are complete and sufficient throughout this guarantee of sufficiency should be insisted upon, if for no other reason than the one that it effectively cuts off all attempts of a contractor to substitute new and untried schemes or materials, devices, as a rule, to lower the cost.

When sufficiency is not guaranteed by the contractor and an insufficiency is disclosed, any extra cost arising therefrom must be met by the owner. If work or materials enter into a building by order or with the consent of the architect, and which was not provided for in the original contract, then such order or consent must be in the form of a special contract by and between the contractor and the architect as representative of the owner.

If a part shown and described is dispensed with and a new part is substituted of equal or different cost such change or substitution requires a written contract.

No substitution of one material for another, or of one design for another, can be stipulated by and between the architect and contractor without the consent of the owner in writing, and such a consent shall be a special consent in each and every case.

Many valuable treatises on the duties and obligations of superintendency are in print. Of these, "Richey's," for example, should always be in easy reach.

In now closing this series of necessarily elemental sketches of a complex and highly important subject, I would once more urge the serious study of the law of operations preliminary to construction, as well as general architectural and engineering jurisprudence upon every one desiring to excel in the profession.

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Concrete Floors Not a Success for School Houses

RECENT experiments by a number of California municipalities have demonstrated the impracticability of bare concrete floors in school houses. If covered with wood the floors are entirely satisfactory but the cement without a covering has been found undesirable from many view points. Students complain that the concrete floors are cold and damp and many cases of sickness are attributed to them. Teachers say the cement floors are not only cold but are extremely tiresome to the feet, especially if they are obliged to stand a good deal. Some teachers have found it necessary to place rugs or carpet under their desks while others have improvised temporary wooden platforms. In the new San Francisco schools and in the high school at San Jose so many complaints have come from teachers and students that the officials are determined to provide a remedy. To this end the City Architect in San Francisco has been instructed to build wooden floors over the concrete surface at an extra cost of $1,000 for each building.

Some Needed Reforms in Contracting

By FRANK MILES DAY

Former President of the American Institute of Architects

IT is told how Brunelleschi designed scaffolding used by the workmen; that he invented necessary machinery; examined clay and bricks, and watched the stone; that he made models of clay and wax—and even of turnips. He made a scale of wood, hiring a joiner to assist him, and, as the story goes, was allowed about ten dollars, in our money, for the model.

And about this time occurred, not the first, perhaps, but one of the first "strikes" of working men. The masons, who had been building the Duomo, said: "See, we are the only ones who know." Their wages had been doubled, and yet they wanted more, and Brunelleschi refused it them; whereupon they "struck"—laid down their tools and refused to work. Next morning Brunelleschi had ten Lombardi there, and he showed them how to set stone; supervised the work until they became proficient. And then the "strikers" came back; saw what had been done, and offered to return to work. They came back again, and went to work at the wages first offered them. This occurred over five hundred years ago. It shows the intimacy which existed between the designer and the workmen—the architect and those who executed his work.

This relationship is changed under our present system of building. The modern system sees a divorce between the architect and the master builder. The architect of today puts down his ideas on paper, and has merely to see that his designs are carried out, yet he is not the executive builder.

The general contracting system is with us. It has its advantages and its defects, and they concern architects and builders. My opinion is that throughout the country something is wrong with the general contracting system. Let us look at the advantages of the system: To the man who builds it brings fair compensation; the owner knows what it will cost him to build. The architect, as his "watchdog," sees that the work is done and done right. Now, this general contracting system is well grounded in America. We have the evils of the system enforced upon us. If all general contractors were men of property, skill, and probity, all would be well and good. But we have all kinds of general contractors. A reliable, reputable contractor has to bid against an irresponsible, and perhaps unscrupulous contractor. Another defect of the system is that the owner has to entrust work to a man whose interests are not those of the owner. The owner is apt to set up a man who has his own and not the owner's interest at heart. This man may have no organization of skilled workers; no executive ability; and the work is done by sub-contractors.

I have six plans to offer in correction of the evils of the present day general contracting system. First, choose general contractors of honor, high integrity, and well equipped by education and experience to carry on building work. The owner should select such a contractor, but he goes by bids. We should insist that we get the best contractor we can. Second, we should seek to control the men who actually do the work, and we can do this—or attempt to do it—by getting a list of the men who get the sub-contracts. The general contractor should furnish a list of names of those he expects will do the work. And yet, the owner doesn't care so much as to who does the casual work—and he will not pay more if different sub-contractors are preferred. Third, an architect should name in advance to general contractors—to bidders—the sub-contractors he wants to do the work. But this remedy meets with objection at once. Bidders "kick" against it, and will not have it. Fourth, architects

should receive bids in advance, and then they could allow an allotted sum for each kind of work. This scheme, however, can hardly be put into practical execution. I know a Boston man who had an experience in erecting a bank edifice. He told the bidders they must put $300,000 in stone—and they objected to being dictated to. Fifth, the master builder should be put upon a quasi-professional basis. This is a better scheme than some I have suggested, because it enables the owner and the architect to select the right kind of a man. Under this plan the builder would do his work honestly and well, for, being a professional man, and one of probity, reputation, and standing, he would be sure to earn a fair competency and would be sure to do good work. This might be termed an "on honor" basis, and it seems to me to be the best solution of the matter. Builders employed on a "fixed charge" or commission basis are quite sure to do good work, and there is nothing antagonistic between owner and builder. Sixth, place the architect in the position of master builder—virtually the reverse of the fifth plan suggested to remedy the evils of the present general contracting system. For the architect to be master builder means that he will have the direct letting of the different parts of the work to workmen. This enables mechanics to feel that they are on a direct basis. Mechanics can bid against their own class. And yet I would be sorry to see this system introduced if architects of indiscriminate ability and knowledge were to be allowed to be master builders.

The plan to have architects master builders, to be successful, takes into account the fact that such architects should have a good system and organization back of them as well as ability, knowledge, and executive capacity. The danger may be, too, that if the architect became too much interested in the details of construction, he would lose sight of designing. It would, at any rate, be a bad system for general contractors, as we now have them, for, under it, they would not exist.

Another plan has been suggested—and virtually "indicated" by Chicago architects, viz.: When the drawings and plans are ready, let us have a quantitative surveyor to take off the plans; he can say to the owner: "Your building will cost you so much; shall I go ahead? If not we can make changes." The quantitative surveyor can say to mechanics: "Here is a contract that will bring you in so much. Do you want it?" Brassey, the English railway contractor, used this plan more or less—and it is a good one where honorable men are involved, and not so good where the contrary is the case and "skimping" may be done.

This striving to get away from "open bidding" is a result of a departure from old-time methods. The present system is unfortunate to the owner because he is not in touch with the actual builders, and this is because he deals with the general contractor. There are two main courses as to the future: The elimination of the broken contractor (who does no actual work), and the making of the architect into a master builder. The second course is one which will put the builder on a different plane from that he now occupies, viz.: A professional plane—a plane on a level with that of doctors, lawyers, and other professional men. The builder must be experienced, skillful and educated. He should not be left to chance in order to make a profit. Under the system of a fixed "charge" he would be sure to be remunerated. He would have the responsibility of the work on his shoulders—would aid and help architect and owner, and see that their wishes were carried out.

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We would never learn the truth about certain folks if they didn't quarrel occasionally.

How Competitions Demoralize

ALMOST every architect enters for an occasional competition. It is the recognized method of filling up spare time and of keeping a staff together when there is nothing else to do. It is also the recognized way by which he who is engaged ordinarily in quite a commonplace practice keeps himself in touch with better things. Besides these two classes of competitors, and saying nothing of the young man who enters for the sake of the experience he may gain thereby, there yet remains a body of men who do nothing else but compete, trusting entirely to their successes—which may average, with the exceptional man, perhaps one in every twenty efforts—for their livelihood. Necessarily those who adopt this method of securing work, to the exclusion of all others, are clever architects, good planners, and excellent designers, possessing the knack of showing all the good points of their schemes with comparatively little effort, and often gifted with the power of adapting themselves to the known idiosyncrasies of the peculiar assessor. It is these men who really set the standard of competition work They are well known to one another and to the assessors, as well as to the general rank and file of the profession, and it is not too much to say that any assessor of experience could pick out the work of this, that or the other of these architects, whatever precautions may be taken to prevent the disclosure of identity. They form a clique; but it is a clique of merit, entry into which is to be obtained by any capable man who has it in him to produce work of equal caliber with theirs. Almost all the open competitions in the country are carried off by one or other member of this small circle. Amongst them it is little more than a gamble as to who shall win—if that can properly be called a gamble which is in its very essence a game of skill. If the problem set is an easy one on a simple site,many men of less note are encouraged to enter, and may stand an equal chance; but large and difficult problems can only be dealt with properly, it seems, by those who have had experience in competition work on a large scale.

So far the state of affairs is well understood and is perfectly legitimate —except in this respect, that the public are led to imagine that architects must be excessively overpaid in the ordinary way if they are willing to spend an immense amount upon drawings, in competition with others, in order to obtain what, after all, is only the ordinary commission if they succeed in securing the work. At one time the conduct of competitions was a constant source of trouble, particularly in the days before the appointment of a professional assessor was a recognized necessity. With his advent one source of trouble has disappeared; but several others remain, the most prominent amongst these being a feeling, justified by many an award, that strict compliance with the conditions is not merely a non-essential, but is likely to be an absolute bar to success. There is one well-known competing firm which invariably puts aside the question of cost entirely and submits an ideal scheme. In several cases the result has justified their action. They have been able to show that a much better building could be produced if only the cost-limit were waived, and they have put their arguments so forcibly as to induce the assessor to recommend the adoption of their scheme. As a matter of strict honesty, this cannot be considered to be right; but the assessor's position has in every case been probably a difficult one: he has felt it his duty to advise the promoters that they would secure much better value for their money by spending a certain amount in excess than by adopting the plans of some other competitor who had literally complied with the conditions. The result has been good for the promoters and for architecture, but bad for the morality of architects.

There is always a temptation, when a cost-limit is fixed, to take the advice of some near relative of Ananias when compiling the approximate estimate, and this temptation becomes almost irresistible when it is known that time and again successful designs have in execution largely exceeded the stipulated cost. The matter is not greatly altered when a competitor honestly states that his building will cost more than the sum named, while pointing out the additional advantages secured by the extra expenditure, thereby securing an award in his favor, while, as a matter of fact, his design should have been disqualified. Most commonly, however, competitors will prepare elevations out of all proportion to the money which there is to spend, trusting thereby to win the competition, and having somewhere at the back of their brain a scheme for reducing the cost, in the event of success, by cutting away this feature or that—substituting, perhaps, eaves for a stone parapet, and brickwork for stone facing down side roads and flank walls, in order to bring down the estimate eventually, caring little that the building erected will then bear but a faint resemblance to that the design for which the promotors of the competition were so proud to approve on the advice of their skilled assessor.

Besides these, there are other well-known tricks—for they can be called nothing else—which are practiced by the less scrupulous competition architects. Perspectives are produced in which no notice is taken of intervening buildings, or they are "fudged," altering the proportions and improving the design, bringing out the more beautiful features, and hiding or omitting those which would be less satisfactory. Occasionally, careful examination will disclose the fact that plans do not agree with sections, nor sections with elevations. "The drawings have been prepared in a hurry, without thinking out all details." This is a very convenient excuse for one who has deliberately set aside the practical requirements of his plan when he has been designing his elevation; but as often as not it is untrue. The want of correspondence between drawing and drawing has been well known to the author; but he has allowed his desire to secure work to overmaster his regard for rectitude. As for conditions laying down precise scales for certain drawings, or stipulating that there shall be no shading and no washes upon the elevations, these are all made to be disregarded more or less, and it is even sometimes extremely difficult to say whether conditions of this sort have been contravened or not. When, for instance, a competitor outlines his prominent features with a broad ink-line, while using a fine line for the minor features, it can hardly be said that he has shaded his drawing, though the effect of shading is produced. When a color wash is prohibited, it is difficult to say whether a flat wash of light Indian ink is permissible. In a recent case it was stipulated that there should be no color washes except on the floors, and that the elevations should be in black ink only; a wash of diluted black ink was introduced—by one competitor only—over the roofs, in the windows, and to mark the recessing under a portico, two different shades being used. Was this honest or was it not? The matter must be left to the consciences of the competitor who thereby emphasized his design and the assessor who accepted it. On the same occasion another competitor spent some £30 in having wash perspectives made in light ink, and he was disqualified—most justly.

The net results of all of these considerations is that competitors are bound to see that strict honesty does not pay, while at the same time they are always in doubt as to how far they may go in their dishonesty with impunity. Nothing could be more demoralizing than this. By means of a strenuous effort the nomination of a professional assessor has been secured in almost every important competition; but the assessor selected is almost invariably

an old competitor himself, tainted by many years of contact with that which is scarcely right, and, without knowing it, he has lost an appreciation of the difference between what is strictly honest and what is not. Even when the most flagrant injustice has been done, the assessor has probably thought that he has acted rightly. We are not, of course, speaking of cases where the only fault to find has been lack of judgment, or of those others in which an assessor has apparently made a bad award in order to create trouble and eventually secure the work himself, but of the many in which the successful competitor has in some way or other travestied the conditions—to use the mildest word possible to explain our meaning. We have sought a cure from the flagrant dishonesty of the olden times, when wirepulling was the rule, and the local committee gave the work to him who had most friends; and the remedy is as bad as the disease, for the professional assessor even with the best intentions in the world is apt to be uneven-handed in his justice.

There is a general, but erroneous, idea that the best architects are necessarily the best assessors, and that the President of the Institute must, from his small acquaintance, be able to select the right man for adjudicating every competition. As a matter of fact, he distributes his patronage, during his term of office, as fairly as he can amongst the best-known competition-winners and the most prominent men on the Institute's Council, regardless of their fitness to act the part of judges in the ordinary legal and impartial sense. What is wanted now is to do away entirely with this patronage system of appointment, and to replace it by the life appointment of retired architects of known integrity, preferably acting on all large works as a jury of three, but occasionally working single-handed, always adopting one uniform system, and letting it be known that the slightest infringement of definite conditions will result in disqualifications. Conditions are often too strict; but here again the assessor is as much at fault as anyone else, for it is he who draws up the conditions, or, at any rate, approves of them. He ought to allow plenty of laxity where laxity is possible. At the same time, once having fixed limits in any respect, they should be most absolutely enforced. Competitors would soon come to know what they had to expect, and there would be very few attempts indeed to win by trickery of draughtsmanship, by misstatement of cost, or by improper finish of drawings if once it were understood that these things would inevitably meet their punishment. It is the fact that, while some assessors are strict, others are lax, and that few know whether strictness or laxity is to be expected in any particular case, which leads to the present deplorable state of affairs. The canker of dishonesty has entered into competition work, and needs to be dealt with as drastically as dry-rot in a building. —The Building News, London.

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As It Seems

There was a young woman named Wemyss
Who complained of her terrible dremyss;
When they called in the doctor
Conceive how it shoctor,
When he said: "You have chocolate cremyss."
—Regina Standard.

* * *

Farmer Hayrick—Why are you going to charge the summer boarders more next year? Farmer Corntassel—I've called the place a bungalow.—Puck.

A Concrete Bungalow in Japanese Style

Brown Bros., Architects

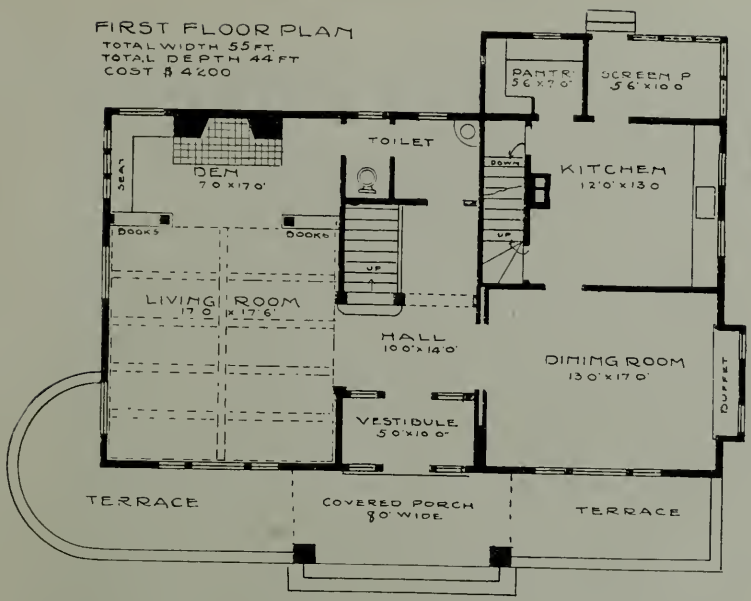
A Concrete Bungalow in Japanese Style

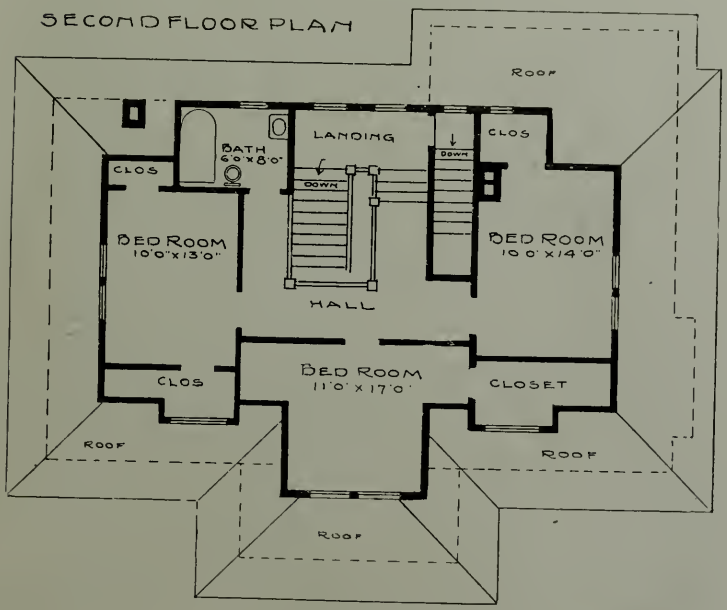
THE application of a Japanese roof to a concrete superstructure by Architects Brown Bros. of Cedar Rapids, Iowa, has developed a striking novelty in bungalow architecture that is destined to become popular.

Living room, dining room, den, hall and kitchen are arranged conveniently on the first floor, while the seemingly small second story contains three roomy bedrooms and a spacious hall. The fireplace in the den and the beamed ceiling of the living room mark the bungalow style of interior treatment. The two rooms mentioned are in reality one great room, being separated only by the partition bookcases.

The covered porch, flanked by terraces and the tilted eaves, give character to the exterior. The house is designed for a lot at least 60 feet wide and is better adapted to a 75 foot lot. The design has been used in California, where the owner built the house for $4,200, using concrete block for the exterior walls, finished with stucco. The interior plaster was applied directly on the block walls. No basement was provided.

It is claimed by the architects that in the middle West this neat home could be built for $5,000 at the most carrying the walls down to the bottom of the basement, finishing the latter with concrete floors and installing a hot air furnace.





A Concrete Bungalow
Brown Bros., Architects

High School Building, San Diego, Cal. *F. S. Allen, Architect*

High School, San Diego, West Tower
F. S. Allen, Architect

Some Practical School House Designs by a Los Angeles Architect

THE several illustrations of Architect F. S. Allen's work which appear in this number, are splendid examples of the Gothic style of architecture as applied to school house construction. In a previous issue schools of the Mission type by Mr. Allen were shown. The Los Angeles architect has devoted much time and thought to school house work and he is one of a few specialists in this branch of the profession who has made good. He is a careful estimator and practical superintendent of construction. He personally supervises the erection of all of his buildings, which are scattered over a number of the coast states.

High School, San Diego, South Tower
F. S. Allen, Architect

Claremont School, Claremont, Cal.
F. S. Allen, Architect

Cloremont School, The Entrance

High School,
San Diego,
South Entrance
F. S. Allen, Architect

Garfield School, Pasadena, Col. F. S. Allen, Architect

Colonnade of School Building, Claremont

High School Building, San Pedro *F. S. Allen, Architect*

American Music Hall, San Francisco
O'Brien & Werner, Architects

How Cold Storage Buildings are Made Heat Proof

THE modern theory of successfully insulating buildings for cold storage and other purposes is based upon entrapped air—air that is actually dead. This means that the air must be in sealed spaces and that the spaces must be minutely small—otherwise the essential idea of "still air" is overthrown. The insulation must depend for its entrapped air upon the interstices or cells of the material employed rather than upon alternate layers of solid insulation and air spaces.

This new principle of insulation, which does away with double walls with air spaces between, has brought into vogue solid insulation, says a writer in the Cement Age. In this type the protection consists of layers or blocks of various materials set in Portland pitch cement directly against brick or concrete walls and protected on the inside surface by plaster or tile. The space occupied by solid insulation is much less than that utilized by the older construction. If a fireproof or slow-burning material be used in making the insulation, the fire risk is greatly reduced.

The materials available for this so-called "solid" method of insulation are chiefly cork and compressed mineral wood blocks.

Cork, by virtue of its natural state and apparent use for which nature intended it, lends itself admirably to insulating purposes. In cold storage work, cork is efficient as a nonconductor of heat, is free from capillary attraction and has no tendency to absorb moisture freely. When used as cork boards it is granulated, compressed in iron molds and baked while under pressure, its own natural gum being liquified by the heat and uniting the granules into solid blocks. These have structural strength and are quite fireproof.

New Type of Bridge in Which the Concrete Floor Is Suspended From the Arch

Concrete Floor Suspended from Steel Arch Forms Unique Bridge

A BRIDGE constructed on a unique plan is approaching completion over the Pennsylvania railroad's line in Philadelphia. The bridge, which was designed by George S. Webster, Chief of the Railroad's Bureau of Surveys, differs from other bridges in that its concrete floor is suspended from the arch. Another oddity is the arch, which is a steel box girder and will be filled with concrete.

"This," said Mr. Webster by way of explanation, "gives the arch greater carrying capacity and requires less metal, thus protecting the steel from corrosion. Economy also entered into the construction of the bridge. By the plan in vogue the cost of construction did not exceed $76,000. Otherwise the cost would have been $110,000."

The only other bridge of this type is at Bellow's Falls, Vermont, across the Connecticut river. The bridge in course of construction has a span 262 feet in length, composed of two steel arches, giving a rise of 40 feet from the roadway. The floor is 20 feet above the tracks, making the top of the arch 60 feet above the tracks.

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Keeping Cupid on the Job

"That widow is a good manager, isn't she?"

"Manager? I should say so. She got that house of hers practically fixed up like new for nothing."

"How did she manage it?"

"She was engaged to the carpenter till all the woodwork was finished, and then she broke it off and married the plumber."—Baltimore American.

Concrete Water Tank on the Ranch

By HELGE PETERSON.

IT frequently occurs that the smaller concrete contractor is called upon by the up-to-date farmer to do work in the country, such as foundations, floors, tanks, cisterns, milkhouses and similar structures. In most cases of this kind the farmer furnishes the material. This leaves no excuse for doing poor work in the attempt to save material—which unfortunately occurs in some cases, thus hurting the reputation of cement work in general—so concrete work on the ranch should always be first-class. It is the plan of this article to give some personal notes on concrete work on the farm which represent several years' experience in this special class of work.

Concrete water tanks are becoming very popular on the ranch, and when properly constructed will give long service and complete satisfaction. About two years ago, while I was doing some sidewalk work in a small town, farmers came to me nearly every day consulting me in regard to cement tanks and how to "fix" them. A few so-called "masons" had been building a number of cement tanks around the country, and nearly every one was cracked and leaking. Some were built almost on top of the ground, without foundation of any kind, while others had the sides built separate from the bottom. All were useless. The farmers said they understood that cement got just like stone, and that no heaving, expansion or contraction would ever crack it. I may add that I did not "fix" many of these tanks—I never learned that trick.

To construct a stock tank which will remain solid and give satisfaction, I have found the following method most successful: For a foundation, excavate to a depth of about three feet, making the hole about two feet longer and wider than the tank is to be. Put in drains—either tile or stone will do—to prevent the surface water from accumulating under the tank. If stones are used, they should be broken, and not used larger than four inches, and there should be at least one foot of gravel under them. Next fill the pit with gravel or cinders within eight inches of the top, level it off for the tank bottom and tamp firmly, using plenty of water to settle it.

The standard depth of a stock tank is twenty-four inches. Add eight inches to this for the bottom concrete and make the outside form thirty-two inches high. When this form is solidly braced in place, spread a layer of concrete eight inches thick over the bottom, reinforcing with iron of any kind, old wagon tires, iron rods or heavy wire.

The inside forms should be made twelve inches shorter than the outside forms at the top and eighteen inches shorter at the bottom. This will give a bevelled wall six inches thick at the top and nine inches thick at the bottom. When the forms are built, put in the outlet pipe for cleaning and then place the concrete, tamping it with a bar or spade. Reinforce the corners with wire or rods. Where it is desired to put on a flat cover, set one-half inch bolts, eight inches long, in the concrete to a depth of five and one-half inches, and fasten to these a two-inch by six-inch plank, to which the cover can be nailed.

In hot weather remove the inside forms about three hours after the walls are made, and apply a coat of cement plaster over the sides and bottom. Then apply a wash of cement and water with a paint brush to finish the tank inside. It is better to leave the outside forms in place until the tank is filled with water. A wash coat of cement and water over the outside will make the tank damp-proof and frost-proof and will also give it a more finished appearance. It is advisable in warm weather to fill the tank the day after it is built.

Building for Archbishop Riordan, Mission Street, San Francisco
Steel Work by the Brode Iron Works *Smith O'Brien, Architect*

Some Concrete Dont's

Don't use large stone or gravel for reinforced concrete work. For floors everything should pass through a ¾-in. mesh.

Don't sift the fine particles out of your sand.

Don't give the selection of the aggregate less attention than the selection of the cement.

Don't leave unfinished concrete work in cold weather without covering it with sacks or felt.

Don't omit to provide for change of volume (expansion or contraction) when dealing with large horizontal or vertical areas.

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Common Sense

This question was asked upon an examination paper: "What steps would you take in determining the height of a building, using an aneroid barometer?"

The answer was: "I would lower the barometer by a string and measure the string."

Search for Most Resistant Pile Timber is Made in California

"WHAT wood is most resistant to the attacks of marine borers?" This is a question uppermost in the minds of all owners of harbor property. Timber experts in some parts of the country give more attention to the solution of the question than others in many cases, and just now it seems that the keenest search for the most resistant pile-timber is going on in California.

The claim is made that eucalyptus piling is more resistant to the attack of marine borers than any other pile timber found on the Pacific Coast, also that certain eucalypti are more resistant than others. It is also claimed that Lawson cypress is particularly resistant to attack. Furthermore, some prominent engineers assert that many creosote treatments now practiced are not effective against borers and that various pile casings are of doubtful value. It is true that a great many piles, both treated and untreated and consisting of different species, have been driven, but in most cases records of durability have not been kept and in no cases have the different species and methods been directly compared under exactly the same conditions, thus making the results of little value.

With a view to furnishing this authoritative information, the Forest Service has planned a series of experiments to be carried out at San Francisco and San Diego. It is the intention to secure several piles each of all of the species of timber occurring on the Pacific Coast which might be used for pile purposes. This will include different species of eucalyptus, Douglas fir, western yellow pine, western red cedar, redwood and Lawson cypress (Port Orford cedar). In addition, it is the intention to secure Douglas fir piles treated with various preservatives and protective coverings. In the experiments only 8-foot sections having an average diameter of 10 or 12 inches will be employed, inasmuch as the cost of handling and transporting larger piles would be prohibitive.

One-half of each kind of timber will be installed at San Francisco and the other half at San Diego. The sections will be fastened to concrete caissons if available. If not, the sections will be fastened to creosoted piles. In such a case they will be so fastened that a space of a few inches will occur between the creosoted pile and the experimental timber. This will guard against any influence which the proximity of the creosoted pile might have on durability. They will be so placed that the upper end will stand about a foot or two above low water-mark.

The ends will be properly protected with asphaltum, copper, or some other suitable substance to guard against the longitudinal attack of borers. Each section will be properly marked with a copper tag for identification. In addition a detailed map will be drawn showing the location of the sections after they are placed in position. In no case will less than six sections of one species be included. The experimental material will be inspected at frequent intervals and reports will be prepared covering the details of the experiments.

Some difficulty is being experienced in securing a sufficient amount of timber for the tests, especially the different species of eucalyptus. Any owners of eucalyptus timber who are willing to furnish a small amount for this purpose should communicate with the Forest Service, San Francisco. Already several manufacturers of pile casings have signified their desire to have piles treated by their various methods. It is hoped that all such treatments will be well represented.

Timber Decay Costs Millions

MILLIONS of feet of timber and finished lumber rot every year in railroad ties, bridges, trestles, piles, farm buildings, fences, poles and mine props. The lumber-consuming public of the United States pays perhaps thirty to forty million dollars a year to make good the losses from wood decay.

These great drains are a source of more and more concern each year. Chemists and engineers who have to do with the uses of wood are working unceasingly on the problem. The U. S. Forest Service has men who devote their whole time to it. The importance of the problem cannot be over-estimated. Millions of dollars are annually saved by preservative treatment of timbers, but much yet remains to be learned.

Wood decay is caused by fungus, a vegetable growth sometimes so small that it can be seen only with the microscope. Its roots or branches, like minute hairs, force their way into the wood tissues and absorb or eat away the solid parts. The collapse which results is called decay. Timber is artificially preserved by forcing into its cells and pores certain substances which prevent the growth of fungi. As long as this substance is present in sufficient quantity, the germs of decay—the threads and spores of fungus—can not enter, and the wood is preserved. This often means doubling and sometimes trebling the life of the timber.

The United States government considers the investigations of the preservative treatment of timber of such importance that the business of one office of the United States Forest Service, that of Wood Preservation, with new headquarters at Madison, Wis., is given over entirely to the work of experiments in co-operation with railroad companies and other corporations and individuals in prolonging the life of railroad ties, mine props, bridge timbers, fence posts and transmission poles.

The lengthening of the life of timber means the saving of thousands of dollars annually through doing away with the heavy expense of labor and cost of material for renewals.

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Concrete for Bridges

THE following item from the Spokane Spokesman urging the use of concrete in the construction of viaducts in that city will be found of interest:

"Concrete is by all odds the best material for bridges. It is taking the place of steel everywhere. The objection to its extra cost does not stand except in instances where very large arches are required. In the viaducts there will be no long spans, and if solid concrete construction should cost anything at all above the price of a combination of steel and concrete, the additional expense would be small. It would be well worth bearing in order to get solid concrete structures. Concrete is permanent. Its strength increases with age. Steel requires frequent repairs, and where it is in the vicinity of railroads it is subject to injury by the smoke from the locomotives. Concrete means that the money that the viaducts cost will be spent at home. Home labor will be employed. But steel means sending the money east and paying heavy charges to the railroads for transporting the materials. Not least important is the matter of appearance. Spokane must compete with other cities in attractiveness. The thousands of families that are looking for homes in the West are apt to select the place that shows evidence of civic pride in the beauty and substantial character of its public works. There is no dispute

about the superior beauty of concrete in bridges. Spokane is going to have a fine equipment of concrete bridges, with the remarkable one at Munroe Street to attract the attention of every visitor to the city. It would be too bad to break the rule in the case of the viaducts, which will be extremely conspicuous structures."

* * *

Here are a few boiled-down facts about concrete bridges, taken from an exchange:

Cost slightly more than steel bridges.

Difference in price soon made up in repairs.

Money spent for steel bridges goes to Eastern manufacturers and railroads.

Money spent for concrete bridges is mostly spent at home. Labor is principal cost.

In many instances a great part of the material used in concrete bridge construction can be found at the bridge site.

Concrete bridges are permanent and eliminate annual repairs.

The life of a steel bridge depends upon the constant care given it to keep it in order.

No painting or other occasional expensive adjustment on concrete bridges.

A concrete bridge grows stronger with age. Other types deteriorate.

Loading capacity of a concrete bridge is four to ten times greater than the ordinary steel bridge.

No wooden floors to keep in repair.

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Largest Scrap Heaps in the World

THE largest scrap heaps the world has ever known, relics of the great conflagration of April, 1906, are located in San Francisco. One heap is forty feet high, 100 feet square, and contains 20,000 tons, all cut in equal lengths of eighteen inches, and piled in one solid mass, with the sides as smooth and as solid as a brick wall. This is the only one of four, of equal size and proportions, remaining intact, in its original size and shape, the other three having been drawn upon as the material was needed. Many other scrap heaps are piled about the bay awaiting shipment, some as big as a house and others mere hillocks, scattered over acres of ground.

Since the fire, one company has handled 150,000 tons, which constitutes the major part of all old material shipped or melted. It has six large shears in operation to cut the iron and steel, either that it may be better handled for shipment or for the furnace. Besides the four heaps which are piled in ship-shape trim, there are other piles of uncut scrap, forming heaps, rearing their tops way above the high fence surrounding the scrap yard. Little of this scrap is used in San Francisco, the bulk of it being shipped to the Atlantic coast or to European ports, to be returned to San Francisco, in part at least, as a manufactured article.

The history of the scrap heaps dates back to the great fire of April, 1906, when the huge iron girders and beams were twisted and bent out of shape, and almost melted. While still almost too hot to be approached, some enterprising men and boys commenced to "pick up" scrap in the burned district, every lot of which was littered with scrap iron and pipe, boilers, tubes and all sorts of metal used in buildings. There was so much scrap in the miles of empty lots from which the buildings had disappeared that no

one cared or claimed the stuff, and the ordinance against looting was not rigidly enforced by the police. The gatherers of scrap had all sorts of excuses for taking the stuff which, at that time, appeared worthless, except for holding a rag roof over a temporary apology for a tent, and in some cases, owners paid for having their lots cleared.

Later men familiar with the junk business hired wagons and boys and gathered scrap iron and steel where they found it, in some cases paying a trifle for it; in others, they obtained permission to take it away. Not a few of these men found ready buyers and made fortunes within a few months.

* * *

Rooms in the Ideal House

IN writing on the "Ideal House," Percy Russell, an English authority on decorative subjects, says:

"The dining room of the Ideal House should certainly be light, cheerful and full of color tones well designed and properly worked out. Monotony, above all things, must be sedulously avoided, and the whole should be so arranged that after being in the room many times there should still be plenty of detail to engage the attention and please the eye. The decorator should here be a veritable poet in colors and lines, and his aim should be to produce a general effect, that once taken in, encourages the observer to look into details and to find in each some new touch of beauty. Let the walls be warm, with well-contrasted bright colors, remembering that there is no better digestive than cheerfulness and a general sense of reposeful pleasure. Cornices, columns and brackets of finely carved work should relieve the walls, and mosaics of colored precious woods might be ingeniously worked in all around, somewhat after the style of the Flemish Renaissance, where the walls are panelled and worked in with suggestions of fish, flesh and fowl, or the vine introduced, with delicate references to the origin of wine and the like. The ceiling should be deeply groined and richly ornamented, and the actual furniture can be of fine walnut, richly and appropriately carved."

For the drawing room Mr. Russell advises a room that is a place of light and beauty. "But nowhere," says he, "should there be anything like a glare, and the arrangement of walls, ceiling and floor must be such as to thoroughly blend together in complete harmony. There should be plenty of small and convenient tables. Satinwood is a good groundwork to be inlaid with original designs worked out in various woods. The chairs should be various, some of them Louis XV style, others after the Empire, and again intermixed might be examples from the Orient, with all kinds of odd stools. The walls may be in satins, and one style that is effective is a ceiling billowed over in a similar material. Another variant is to stretch a rich brocade on frames. As to the prevailing color note, gray-blue may be recommended.

"As there would be more than one drawing room in the 'ideal house,' the dwellers therein could have the luxury of a variation. One might be carried out in white and yellow with a green touch in the curtains and hangings. The white wood writing-table, for example, could be relieved by green. The carpet should in this case have geometric designs in, say, green and yellow, the ground being a warm cream. On the walls we could have a brocade in bright gold, strewn with a cameo-like geometric decoration. The moulding of the ceiling should correspond with the yellow tone of the walls, while the windows should be draped with silk of the same hue, a color that we believe the Chinese, who know something about cheerful decoration, have called 'the daughter of light.' The warmth of these hues undoubtedly induces placidity, cheerfulness and general complacency, and that should be the object aimed at by the decorator in equipping drawing rooms, where it may be supposed that the spirit of enjoyment reigns supreme."

Vitrified Brick Roadways

By WILL P. BLAIR in Good Roads Magazine.

A VITRIFIED brick highway is the one kind of pavement for country roads that has clearly passed the experimental stage. The most important special features that have been proven beyond all dispute are as follows:

They are the most economical.

They are the most satisfactory in use.

Their proper construction in all its details is easily understood.

It is true that they may and generally do cost one-fourth to one-third more in the first instance than any of the highways made of macadam and broken stone, even where they are treated by one of the various methods in the use of asphaltum, oil or tar.

The cost of a highway, however, is not to be measured by the first expenditure for it, but it must be measured by the cost of the first expenditure plus the cost required to maintain it in first-class condition for the purpose for which it was built.

There is another element of cost that must be considered by way of comparison in the economy of a brick road with that of any form of gravel or macadam, and that is, the deteriorated condition which always obtains for a considerable lapse of time before a repair is or can be made.

The writer witnessed a condition illustrating this element of cost but a few days since. Six years ago, to the then corporate limits of the city of Linton, Ind., a brick street was constructed. Three years afterwards it was determined to construct a highway of broken stone from the terminal of this improvement some distance into the country. From the time the improvement was finished, the highway was subject to excessive travel. For more than a year past, a deteriorated condition of the stone portion of this road was such as to make it impossible to haul as much tonnage per vehicle by at least 50 per cent. as was hauled over the road when in first-class repair.

The economy of that road must be measured by the loss incidental to its condition and character. In this case, as in all like cases, the brick portion of the road sustains every element and character of a high-class road, as from the beginning. It carries the same load and will carry the same load for years to come.

The broken stone road entails a 50 per cent. loss in its use. Unless rebuilt and brought into complete and full repair, it will soon lose its value entirely as an improved road. The difference in the cost of the two is consumed already. The writer recalls another example of a macadam road constructed three years ago in northern Ohio, at a cost of $76,000. It has proven so worthless in use that the farmers along its route, tired of the excuse for a road, have recently petitioned for a brick road, thus correcting the mistake they made in the first instance, willing to throw away the $76,000 in order that they may have something that they can use every day in the year.

The writer recently received information that certain brick roads in Washington county, Ohio, have been built for $11,500 a mile. Such a thoroughfare is to each acre of each section on its either side a cost of less than $10. In other words, the interest charge for such a road per acre is less than 50 cents annually. With thirty bushels of wheat to the acre, or fifty bushels of corn to the acre, hauled away when the market is near its best, or at an average advantage of price invariably as against when it can be hauled away with the road in permissible condition, at least 10 cents a bushel may

be gained in the disposal of crops year after year. In other words, an advantage of from $2.50 to $4.50 per acre is always the market advantage enjoyed by reason of good roads, not to say anything of the economy in the wear and tear of vehicles and abuse of horses.

The vitrified brick road is always satisfactory in use because always in repair—never a mudhole or a chuckhole, and practically free from dust; it does not originate dust at all. The traction resistance is so little that the maximum loads can always be hauled. The greatest satisfaction, because it is the exception, in this one peculiar respect—of all the roads that may be built, the brick road is the one road where legislation against its use is never necessary. In many states legislation of this sort against improved highways practically stops their use for weeks at a time, strange to say, when such forbidden or restricted use is the very season of the year when it would be most advantageous to the farmer to put them to his greatest use. Unaffected by the weather, they are equally good during the leisure season as when work is most called for upon the farm proper.

A most important feature of vitrified brick roadways is that their proper construction in all details is easily understood. The essential ingredients that enter into all parts of the construction are not mystified in unknown chemical terms or secret processes. The price of every ingredient is easily obtained. The quantities necessary in the construction are well known, and therefore the actual cost may be easily figured by the taxpaying public. There is no possible opportunity to impose an unreasonable profit upon the taxpayers.

There are a few important details in the construction of a brick roadway any and all of which are easily complied with, but each of which is important in affording the perfect road of its kind. The brick must be of good quality. The concrete foundation must have a smooth surface which shall conform to the grade of the finished roadway. The sand cushion on top of this foundation and underneath the brick must be of uniform 2 inches in thickness, and when the bricks are laid, they must be rolled and compacted thoroughly into this cushion, and, incidentally, the cushion itself must be thoroughly compacted.

In the application of the cement filler, it must be mixed and applied in the proportion of at least one to one and in such a manner that this proportion shall obtain uniformly throughout. The minute method of application, as well as other details in the construction of brick highways can always be obtained gratuitously by application to the National Paving Brick Manufacturers' Association, Board of Trade building, Indianapolis, Ind. The simple directions for the proper construction are readily understood by anyone seeking to understand their importance.

When built in accordance therewith, there is no charge against a highway, and will be none for very many years to come. They are always ready for use and uniformly so in all conditions of weather and at all seasons of the year. They will last a generation without any cost of maintenance. If the doubtful public and the public inquiring for good roads could but spend a day in the inspection and use of the brick-paved country highways in northern Ohio, the question would easily and promptly be settled. These roads afford an example of the best for all purposes with the least cost of maintenance of any like number of miles of highway in the world.

*

* *

Tommy—Pop, what is meant by the mother tongue? Tommy's Pop—Sh-h-h, my boy! Don't get her started.—Philadelphia Record.

Decorating the Dining Room

NOW and then one comes across a dining room in which one feels that the architect's work in its finer touches has been subordinated to, or at least guided by, the taste of the owner, says an authority on decorative subjects. I know, for example, an oblong room of stately proportions with a swelled bay at one end, its opening supported by two marble columns showing seven colors, supporting a capital of more than usual delicacy and grace. Two wooden columns, once part of some Sicilian chapel, form the framework of the entrance door, the over door being finished in an arch of the same material and design. A blue, now faded into charming tones, colors the wood, while over this blue there is wrought a design in gold, showing leaves and vines, carved in relief, among which charming Amours disport themselves.

The sideboard, from some other part of the chapel, follows the same design and color. No silver is permanently displayed on it; some rare old drinking cups and chalices are set out instead and protected by glass fitted to the front. For among the blues and golds, it was instantly felt, silver, however rich in itself, would have struck a jarring note.

The wall-spaces of this room are covered with tapestry, in which again the blue is felt, now in a patch of sky, and now in the sweep of a royal robe. The ceiling is carved, the Amours of the columns being repeated here, while the panels are filled with lovely designs in color.

The lights are hidden in the cornice, except for two huge gold candelabra, resting on ornamented columns, which are placed on either side of the room. The chairs are covered with a blue, deep enough in tone to be felt rather than seen, the backs being capped by small gilded ornaments. The curtains are of blue, showing the same charming subordination of tone. Thus the room has everywhere been made to preserve a certain *ensemble*, being tied together by color, as it were, a color so reposeful and enveloping that at no time is one suddenly aroused to look at some special object.

The influence of it all comes gradually, and never as a question of mere magnificence, but as that of a lovely atmosphere in which individual elements of beauty gradually unfold themselves. And this, it would seem, is the final requirement of all interiors. They are first enveloping. You may get their atmosphere at once, be played upon by their color and feel their charm, but the perception of even their unrivalled details must come to you later. Occasions must open your eyes, moods, necessities. They are like the human character in that, and must develop reserve powers, else all you thought excellent at first is a mere flash in the pan, quickly past and forgotten.

No one who goes into the more important houses of the day can fail to be impressed by the fact that two orders of mind have been at work. There is first the colorist, the man who wants richness, warmth, tone, magnificence, at any cost. Then there is the man whose allegiance to the beauty of a line is unswerving, and who will not permit so much as a tone to distract you from the grace of an arch. Imagination has therefore run riot in some of our dining rooms.

Palaces and churches have been robbed to add to their splendors. Superb stuffs and hangings have been introduced, crystal lustres and silver lamps, with those sometimes of brass—that richest and most beautiful of all reflecting surfaces. In what are called our state dining rooms the models for which are either copies or adaptations of famous foreign rooms, the architect has allowed no limitations to his flights, but has gone on piling splendor on splendor, adding arch to arch, and pillar to pillar, splashing on gold with

reckless profusion, and hanging crystals wherever their gleam could make for a greater resplendence.

In contrast to these, there are to be found dining rooms which, by very contrast, seem austere, nothing being permitted, even in the way of color, which might possibly interfere with the repose of a given line. I have one such room in mind, the white wooden surfaces of which are broken into panels forming sunken arches of charming design. A soft pale gray hangs at the windows, the sideboard is filled with cut glass, no color being anywhere permitted. Yet, oddly enough, no sense of coldness is conveyed; rather a feeling impossible in any other white room where the touch has been less certain, and the proportions less carefully preserved.

I have seen other rooms where the same attempt has been made, but they have been white rooms relieved by a color, and always demanding the extraneous, to give them a habitable quality. A repose, difficult to describe, steals over the visitor, in this one. The eye, never carried anywhere against its will, is yet made to rest comfortable wherever it strays. The table, too, with its flowers, gains a new quality, becoming as it were the center for disseminating cheer rather than the point toward which the interests converge.

* * *

Ancestry of Mission Furniture

THE coming of the Franciscan fathers to the shores of the Pacific in their propagation of the Christian faith accidentally gave rise to a new style in architecture—a style influenced almost entirely by utilitarian demands upon the ingenuity of the inexperienced builders. The tenets of the austere brotherhood founded by St. Francis imposed upon its members vows of chastity, poverty and obedience, which easily explains the bareness of the original mission buildings. Anything pertaining to ease or luxury was not entertained; comfortable chairs and upholstered seats had no place in the habitations of the good friars, accustomed for years to deprivations and rigid abstemiousness.

Practically the only effort they put forth to depart from the severe plainness of whitewashed walls was in the interior decoration of some of the sanctuaries. There is but little doubt that it would have been better had even these attempts not been made for the buildings would have been more impressive—one might even say more artistic—had the interiors been left in their pristine simplicity. Masses generally lend themselves to beautiful arrangements, and the spontaneous expression of the builder in the necessity of meeting peculiar conditions may result in the production of a style new and dignified. In big things defects are not apparent. The harmonious arrangement of general lines usually gives an artistic result.

It was only in their attempts to embellish their structures with decorations and display of craftsmanship that the builders of the missions failed in producing praiseworthy results. The padres knew little or nothing of drawing, less of color effects. They originated nothing new in these interior decorations because of their limited knowledge of the arts and lack of skill. Naturally their minds reverted to the visions of the marvelous interiors of the Spanish cathedrals—Burgas, the beautiful or the majestic Seville. Hazy memories of these glories guided by unskilled fingers in attempts to reproduce what had once been fashioned by master hands, so that these decorative effects have all the crudeness of the products of primitive minds, and often occasion a smile of derision.

In art, as in everything else, however, the underlying motive must be considered, and since the Franciscan monks earnestly endeavored to beautify the

naves of their churches as best they could with the limited material at hand, although they failed artistically, their efforts are worthy of consideration and respect. The somewhat ornately carved timbers of the Santa Fe mission church illustrate the spirit of reverent sentiment that actuated the workmen probably better than any of the California ones. The devotional love for their holy places prompted the natives to bestow an infinite amount of care upon the carving and to paint elaborately each beam.

Portable furniture of those early days was simple in the extreme, indeed hardly worth mentioning as such. A slab of a tree trunk, sawed and smoothed, with three rough branches for feet, was the seat of the Franciscan monks—tables and settees were of like crudeness. It is a far cry from that to our modern oak or mahogany easy chair, which seems entirely foreign in both form and comfort.

As to that which we designate "mission furniture," whose simple, comfortable, artistic lines make it peculiarly suited to California use, the popular acceptance of it as a descendant of the San Diego or San Fernando craftsmanship is entirely erroneous. Modern mission furniture, notwithstanding our pardonable desire to claim it as our own, is an English product—a style due to William Morris, that prophet of solidity of construction and nobility of line. It is to the genius of that master craftsman that we owe much, indeed, of our present beautiful simplicity of decoration, effective employment of color masses, and harmonious unity of design which is gradually obtaining in all civilized countries and relegating to the background the ornate gilt and pretentious monstrosities of a generation ago.

Morris' artistic soul rebelled against the degenerate style that prevailed in furniture "fashionable" in the 70's—those fantastic shapes—carved, tortured and twisted—finished in ebony, gilt or enamel and upholstered in red plush, and he set about striving to awaken the world to the beauties of genuine, honest handicraft. The creation of furniture along simple lines suggested itself to the directors of various "mission schools" throughout England as a channel through which the dexterity they were striving to encourage in their wards might express itself. With the first exhibition of this mission school furniture in England its popularity was assured and it was straightway imported into the United States, where it met with equal favor because of its novelty—perhaps, too, because it was English. At any rate it was soon in great vogue and its manufacture was taken up by craftsmen in this country, first at Washington, D. C., and afterwards in various other places. Improvements were made as the need arose until the handmade objects now produced under the name of "mission furniture" bear little resemblance to their first English cousins. But with the origination of the style the Franciscan monks of the eighteenth century had nothing whatever to do.

Aside from those purely primitive articles of use fashioned by the Mission fathers, objects quite similar to those made in every mining camp today, one finds that the neophytes built many quaint and curious pieces of furniture which, if they sometimes failed in being delicate or perfect in workmanship, nevertheless had a certain character and charm. In the baptistry of the Plaza Church in Los Angeles is a bench that represents probably one of the earliest efforts in cabinet work among the natives. It is crudely joined, clumsily put together, yet it has good lines, and was built substantially enough to last for ages. The scalloped board across the back is an odd example of the primitive desire to ornament an otherwise plain piece of furniture, and, while it is both unnecessary and undesirable, the humble artisan's mistaken idea of beautifying his handiwork is pathetic.

In many of the missions are to be found similar articles. The lecterns,

confessionals, altars, doors and pulpits were often the work of natives, produced for the most part in imitation of those brought from Spain or Mexico, or from prints and drawings in the possession of the Franciscans, they rarely attempted anything new or independent in style.

Besides this class of furniture there were the imported pieces, sent to the missions of Alta California, from Spanish ports, and which are still treasured as fine, interesting mementoes of the early days. The shapes of these are distinctly Moorish in character for the most part, although others are Oriental or Dutch. In the Mission Museum at Santa Barbara is a chair, a relic of the early settlement, that has well-rounded arms, a gracefully shaped back, and although of somewhat plain appearance it has all the charm of an eighteenth century piece of Netherlands craftsmanship. How it found its way to Santa Barbara is a question. The relations between Spain and the lower countries were for a time so close as to have a marked effect upon the art of both, an association of two of the most uncongenial and unsympathetic nations that were ever linked together. The chair may have come around the Horn, or it may have been left on the shores of California by some unknown navigator circling the globe.

In the pulpit of San Luis Rey and the confessional of San Buenaventura we have the highest attainment of early handicraft. Whether these were the work of the friars themselves or of the converts under their direction it is impossible to determine. The pulpit, and especially the closet in which were kept the sacred vessels, at San Juan Bautista, betray the influence of a trained artificer, a man more than ordinarily skilled in the use of tools. The music desk, however, that held the ponderous psalter, is an example of simple line construction worthy of William Morris himself—so, too, are the wooden candelabra and paschal candelstick at Santa Barbara. But with few exceptions there is little about these relics of the Missions to connect them with the designs now common to mission furniture.

With the beginning of the nineteenth century intercourse between Spain and the new colony had become more frequent and there were doubtless adventurous cabinet makers, skilled in all the arts of the trade, who were attracted to the shores of the new world. Soon the work of these men began to replace the crude efforts of the native artisans. The few settlers, secure in their possessions and blessed with abundance, sought to surround themselves with the comforts and luxuries of life and imported from the mother country furniture that was the European fashion of the day. One by one the primitive products of the Mission workshops disappeared; they were left neglected in outbuildings or often ruthlessly destroyed to make way for more elaborate objects.

Like the old "carreta" of the desert, of which there are now only a few curious examples still extant, where a hundred years ago scores or them noisily creaked their lumbering way over the camino real, the first furniture of the Mission padres is to be found in only a few of the old accustomed places, and in the relic rooms of the museums scattered throughout California.—Hector Alliott in the Northwest Furniture Review.

* * *

Loring P. Rixford Resigns

Loring P. Rixford, who succeeded Newton J. Tharp, deceased, as city architect of San Francisco, has resigned and is succeeded by Emil de Neuf, who was Mr. Tharp's assistant. Mr. Rixford has gone East to recuperate. Upon his return he will resume the practice of his profession. Mr. Tharp is the architect of the Bohemian Club building.

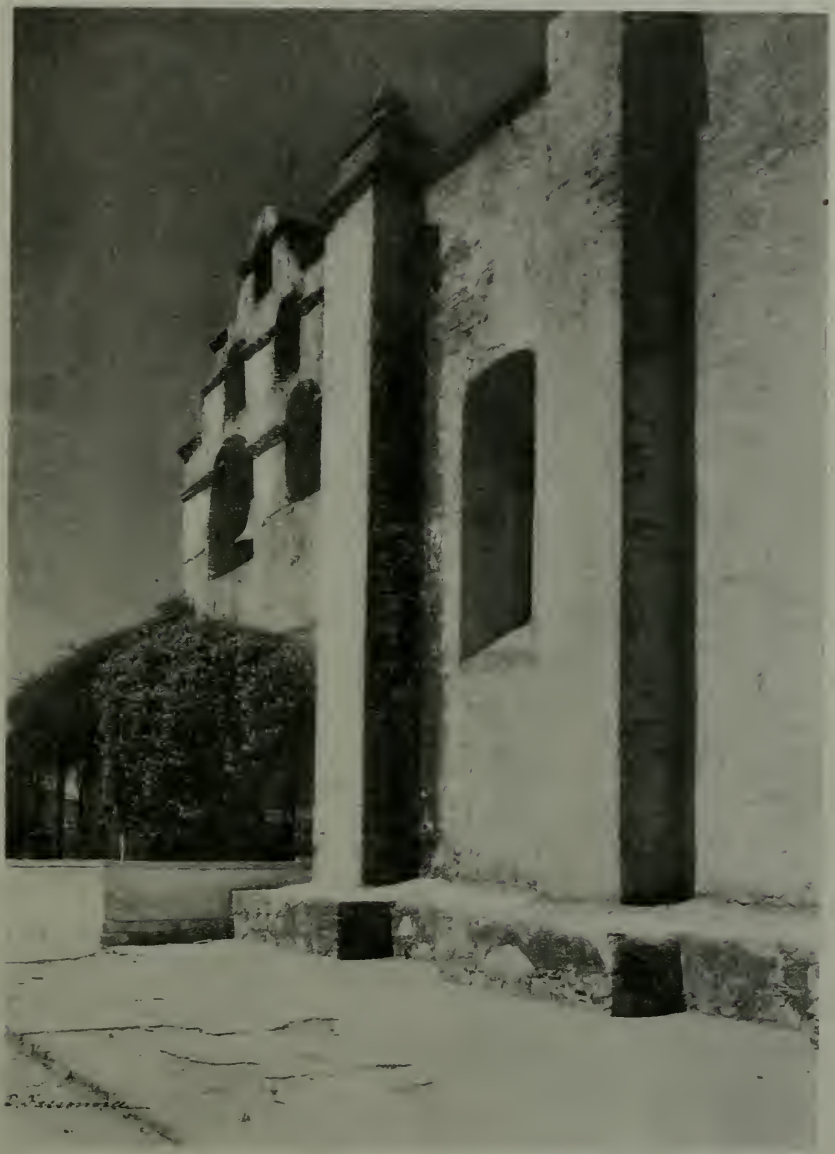
Selections from the

ANNUAL EXHIBITION

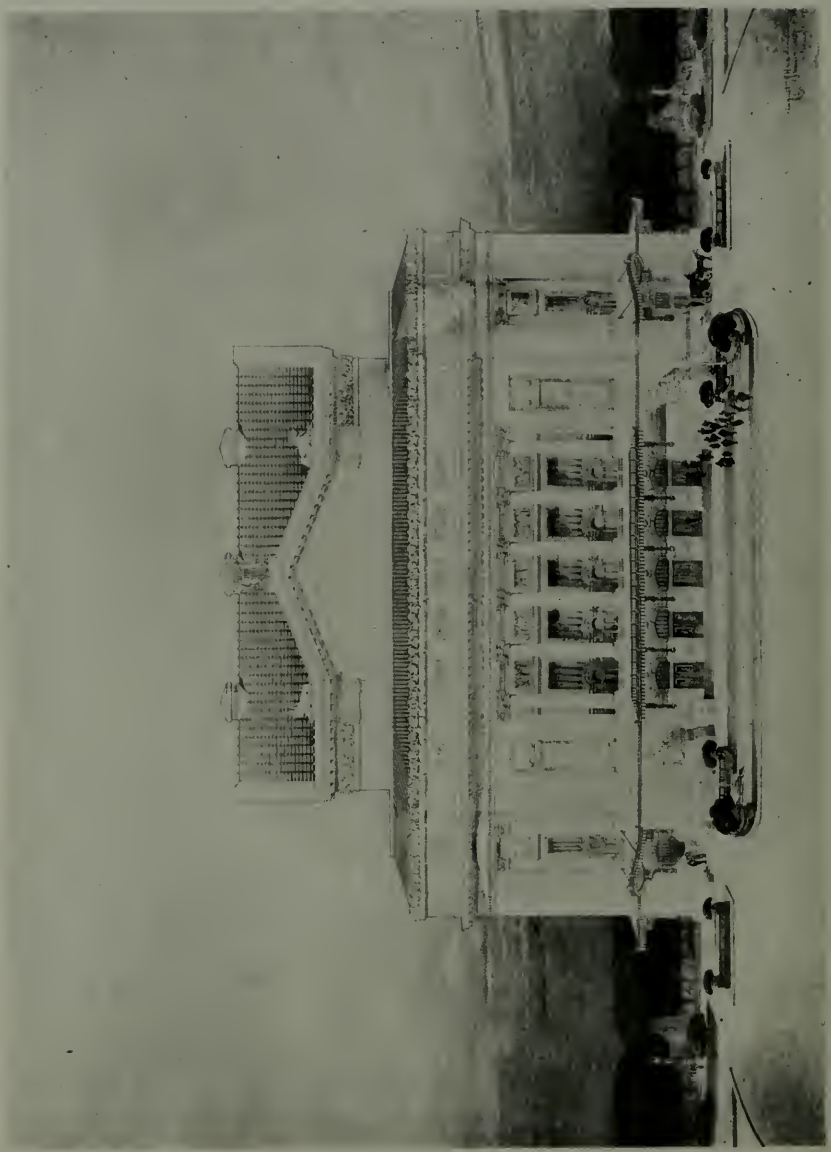
of the

San Francisco Architectural Club

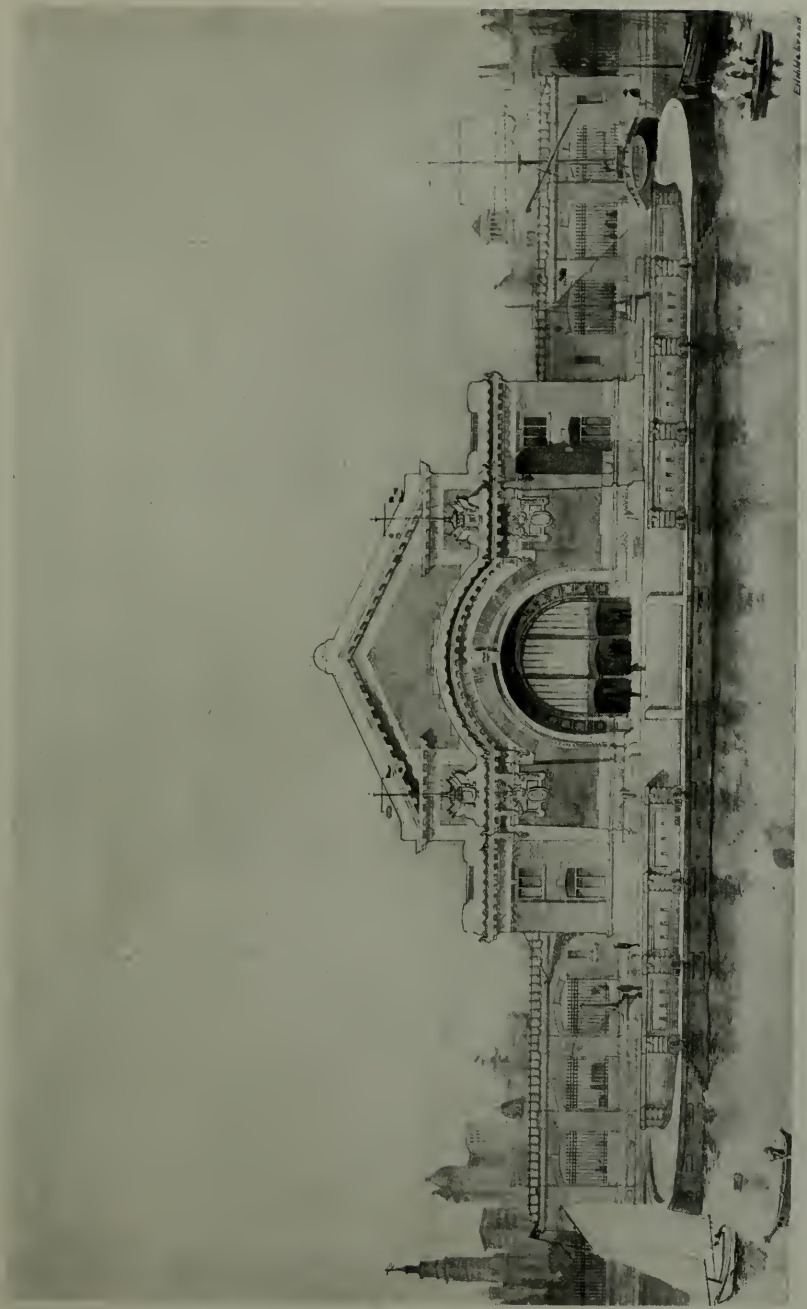
Fenyes Residence, Pasadena
Robert D. Farquhar, Architect



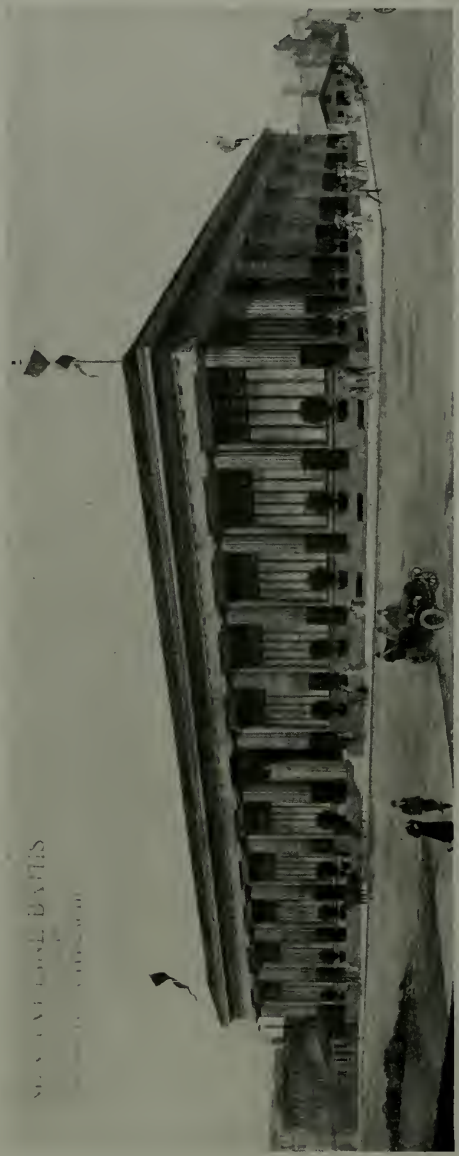
Mission San Gabriel
W. E. Dassonville



A National Theater, August G. Headman, Architect Thesis Design, University of Pennsylvania



A Custo n House *E. H. Hildebrand*



New Lurline Baths, San Francisco

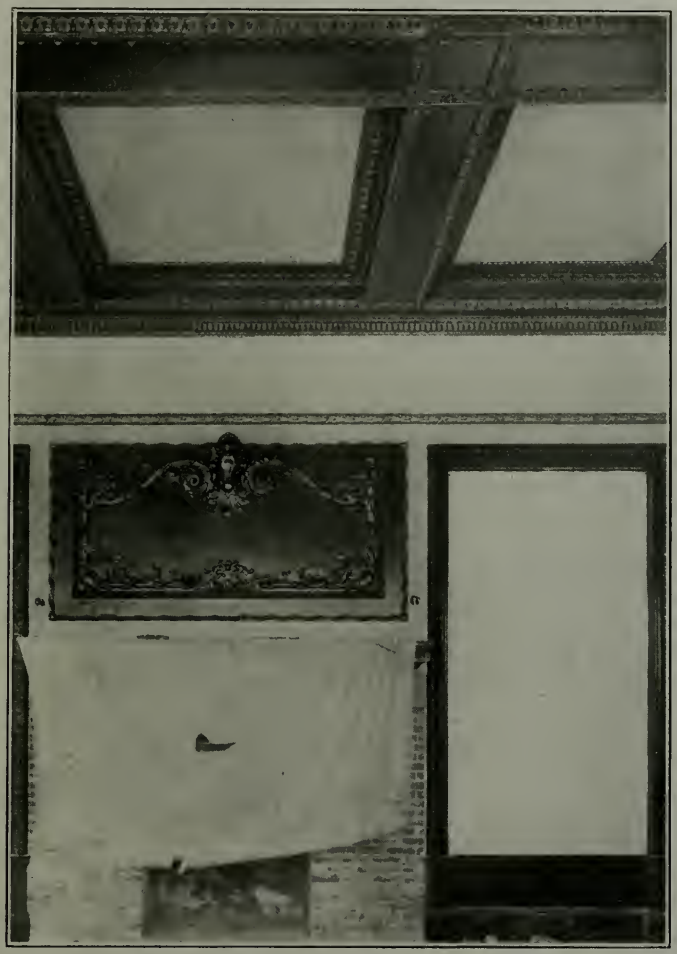
MacDonald & Applegarth, Architects

Behlow Building, San Francisco
John & Schmidlin, Architects

Frieze, Showing the Old Cliff House

The New Cliff House, San Francisco
Reid Bros., Architects

Interior Cliff House, San Francisco
Plaster Work by D. Ross Clarke



Interior the New Cliff House, San Francisco
Plaster and Stucco Work by D. Ross Clarke *Reid Bros., Architects*

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Wants Cornice Removed.

Architects and builders are following with considerable interest a suit recently filed by one Isaac Kohn against United States Senator George C. Perkins to compel the latter to remove from his office building at the corner of Kearny and Bush streets, San Francisco, a cornice which Kohn claims projects four feet over the plaintiff's adjacent property in Kearny street. Notwithstanding that Perkins admits the cornice overlaps his neighbor's property, it is stated he has repeatedly refused to remove it.

Kohn, who is a wealthy property owner living at San Anselmo owns the lot between Perkins' eight story building and the Stanford Hotel. A four story building stands on Kohn's lot, but he plans to run it up to a height greater than that of Senator Perkins' building. The only obstacle in the way of the con-

templated improvement is the overlapping cornice.

In praying for an order compelling Perkins to remove the cornice Kohn states that he does not ask for pecuniary damages because such compensation would not afford him adequate relief.

The building of Senator Perkins was erected more than two years ago. If he were permitted undisturbed to use it for five years his right to the maintenance of the cornice could not be challenged.

Los Angeles Chapter, A. I. A.

The Southern California Chapter of the American Institute of Architects at its regular monthly meeting in November elected the following delegates and alternates to the Forty-third annual convention of the Institute: Delegates, Octavius Morgan, A. F. Rosenheim, C. H. Brown, Frank D. Hudson; alternates, Messrs. Hunt, Austin, Eisen and Parmentier.

The members present took a decided stand against the proposed change in the ordinance regulating the height of buildings in Los Angeles and appointed the following committee to act for the chapter: A. F. Rosenheim, chairman; John Parkinson, A. B. Benton, John P. Krempel, Fernand Parmentier. The chapter put itself on record as opposed to a greater height of buildings in the business district than now allowed.

Action was also taken on the question of better schoolhouse construction, the chapter appointing a committee consisting of A. Rosenheim, John P. Krempel and R. B. Young, to go before the school board with plans for a model fireproof building and estimates on the cost of its construction. Plans in detail were prepared for such a structure by Mr. Rosenheim.

A resolution was presented on the Preservation of California Missions by Mr. Benton, and ordered spread on the minutes.

Among the guests present was Mr. Joseph Jacobberger of Portland, a prominent architect of that city, who delivered a talk.

Resolutions of condolence upon the death of the late Architect Peter August Westberg were adopted, ordered spread on the minutes and a copy sent to the bereaved family.

The following were announced as having been admitted to membership in the chapter: B. B. Bixby, B. Cooper Corbett, W. F. Thompson.

Architects Sue For Fee.

An action has been commenced in the Superior Court at San Francisco, by Frank T. Shea and John O. Lofquist, architects, for fees, alleged to have been earned two years ago in construction of the Union Square Hotel at the northwest corner of Stockton and Post streets, San Francisco.

The hotel building is the property of Mrs. Blanche Burbank. It is a seven-story structure covering one-half of a fifty vara lot.

According to the records the amount of the architects' bill is $13,250. An attachment was placed on the property on November 5th for that amount. According to Mr. Lofquist, there has been no dispute about the bill for services in construction of the hotel building. The trouble has been in enforcing a payment of the fee. The work was done two years ago and the firm has expended large sums for which it has not been reimbursed.

Architects Sued.

The American Biscuit Company, which was sued by Ralph Warner Hart for $10,323 for services as architect in the erection of a reinforced concrete factory, has filed an answer and cross complaint claiming $29,000 from the architect. Mr. Hart is a reputable San Francisco architect.

A suit for $10,000 damages for libel based on a letter written from one business firm to another, has been instituted by Mayer Walk, house painter, against Macdonald & Applegarth, architects.

Walk was subcontractor for the decoration of a building being erected by the Healy-Tibbitts Construction Company upon plans prepared by Macdonald & Applegarth. The architects are accused of having written to the Healy-Tibbitts company a letter in which appeared the following:

"This man is so hopelessly incompetent and his work is so abominable that we feel like having it all burned off and done over by a good painter to protect ourselves."

These words are false and defamatory, Walk alleges.

A Block of Fine Homes.

Architects Nicholson & Company, Pacific building, San Francisco, have made plans for five duplex residences costing $7,000 each, for the Pacific Realty Co.

This group of beautiful homes is to be erected on Presidio Grove Lane, near Union street, and will occupy nearly a complete city block. The property is situated in one of the finest of San Francisco's residence sections. The lots all lay along a steep grade and no one residence will obstruct the view of another. One of the pleasing features of the property is the fine marine view obtainable from anyone of the home sites.

Two of the residences will be two-stories above ground, while the balance will be of the one-story and finished basement type. The slope of the ground is such that all basements will be practically ground-floor rooms.

Oakland Public Building Competition.

THE Oakland Board of Public Works will soon hold an architects' competition for plans for the new municipal buildings on the city hall site. Conferences have been held by the members of the board with delegates from the San Francisco chapter of the American Institute of Architects, under whose rules the contest will be conducted.

The architects present were George B. McDougall, Manker O'Brien and William Mooser. They explained the method of conducting the competiton and on their advice the board will proceed.

First an advisory architect will be appointed. He probably will be a Pacific coast architect and he will prepare guide drawings showing the shape of the city hall property, the plan on which Washington street is to be extended to San Pablo avenue, and the number of offices required in the administrative buildings.

As complete a description as can be prepared will be included in the call for plans. The board figured that 60 days would be required for the architects to make their drawings and designs. After the winner of the contest has been named 60 days more will be needed for completion of the details. At least 30 days must be allowed for unavoidable delays and 30 days for the legal advertising for bids on the structures. This will defer the time of laying the cornerstone of the city hall until next July. Mayor Mott suggested July 4th as the most suitable date.

The architects suggested that six prizes should be offered so that the competition would bring out many plans. The amount of the first prize is to be fixed by the board. The others will be: Second prize, $3,000; third, $2,500; fourth, $2,000; fifth, $1,500; sixth, $1,000. The amount of the bonds voted will cover this expense and provide the $1,000,000 needed for erecting the city hall.

Splendid Theater for San Diego.

Quayle Bros., architects, 229 Granger Bldg., San Diego, are preparing plans for a beautiful theater building to be erected at the corner of Third and C streets for Fulkerson & Palmer. The building will be a two-story brick structure, with pressed brick front and composition roofing. It will be 94x150 feet in size, and will contain twelve offices on the second floor, besides the theater. The lobby will be in the C street frontage, and will measure 16x29 feet. On each side of the lobby will be a storeroom of the same size, and five similar stores will occupy the Third street frontage. The stage will be 80x 34 feet, and will be separated from the auditorium by a steel curtain. The body of the theater will be 72x80 feet, and will contain 860 opera chairs and four boxes. The balcony will seat 600 persons. The building will be equipped with heating system, ventilators, eleven fire exits, fire-escapes, etc., and will cost about $75,000.

Coming Architectural Exhibition at Los Angeles.

The Architectural League of the Pacific Coast will hold its third exhibition at Los Angeles, January 3d to 16th, under the direction of Mr. M. A. Vinson. Mr. Vinson's chief work will be the publication of the "Year Book," and he is offering a prize of architectural books to the extent of $25 for the best design for a title page. A prize of $25 is offered by A. F. Rosenheim for the best design for the cover, and a similar prize will be given by Hudson & Munsell for the best design for a "Poster." The office of the exhibition committee is at 1411 Union Trust building

One of the principal attractions at the coming exhibition will be an exhibit of one hundred and twenty-five frames of "mural paintings" by Edwin Howland Blashfield of New York City, one of the foremost artists of the country. These paintings are now on exhibition in Denver, and through the efforts of Mr. Vinson and the exhibition committee, Mr. Blashfield has consented to allow them to be exhibited in the Southern California metropolis. It is expected that this and other fine attractions which will be provided will draw a large attendance upon which the success of the undertaking depends. The exhibition will be held on the fourth floor of the Hamburger building.

Los Angeles Architectural Club Meeting.

The first meeting arranged by the entertainment committee of the Los Angeles Architectural club was held the latter part of November in the club rooms in the Union Trust building. An interesting program was provided and several speeches were made by invited guests. A feature of the meeting was an exhibition of sketches and designs in art glass furnished by MacKay & Co. A Dutch lunch contributed materially to the pleasure of those present. It is the intention of the committee to have one of these entertainments, including a program and Dutch lunch, each month, and it is expected they will become quite popular with the members.

$45,000,000 for San Francisco's Water Supply.

City Engineer Manson of San Francisco estimates the cost of the proposed municipal water system with sources of supply in the Sierra at $45,000,000.

The City Engineer prefaces his figures as to the water supply system with the statement that they constitute "estimates for furnishing the City and County and its inhabitants with a sufficient supply of water for all purposes from Lake Eleanor. Tuolumne river and its tributaries, Tuolumne county."

"The storage and delivery system," continues the Engineer's report, "are designed to supply, under the present development, 60,000,000 gallons of water per day, the service reservoirs in the city to hold six days' supply, the distributing system to serve 15,400 acres with a population of 735,000.

Following are the items that go to make up the total of $45,000,000:

Lake Eleanor Division	$ 1,834,525
Tuolumne Division	3,285,400
Foothill Division	1,708,500
Valley Division	9,118,700
Bay Division	12,792,100
City Division	11,100,000
Real estate and right of way	1,000,000
Contingencies, engineering, etc.	4,160,775
Total	$45,000,000

The City Engineer calls attention in concluding his report to the fact that his plans and estimates "provide for a power development fully equal to all pumping requirements, and do not include the development of the Hetch-Hetchy reservoir."

Consideration of the latter feature of the original Sierra water supply plan is omitted altogether from the project as it is now being dealt with because of the requirement of the federal authorities that the Lake Eleanor source of supply shall be developed first.

The Clay Products of California.

The yield and value of the mineral substances of the State of California for the year 1908 are to be made public in the form of a pamphlet that is now in the hands of the state printer and will be issued soon in complete form. In the list of mineral productions of the state clay products occupy fourth place. The total value of structural materials in 1908 was $10,132,179 and of this more than one-fourth was for brick, terra cotta and other products of clay. Of this brick comprised a value of $2,506,495 while pottery products were valued at $325,147. According to the list compiled by the State Mineralogist brick clays were utilized in the following counties of the state: Alameda, Contra Costa, Fresno, Humboldt, Imperial, Kern, Kings, Los Angeles, Marin, Mareda, Mendocino, Merced, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Shasta, Solano, Sonoma, Tehama, Tulare, Amador, Monterey, Placer, Stanislaus, Yuba and Ventura.

Clay for pottery came from Alameda, Amador, Calaveras, Los Angeles, Placer, Riverside, Contra Costa, Fresno, Orange, Santa Cruz, San Joaquin, Solano and Ventura. All of the fuller's earth came from Kings county and the glass sand from Alameda, Los Angeles and Monterey counties. The most marked development during the past ten months in the clay line in California has been the opening and developing of new beds of fine pottery clays and within a short time it is expected that the use of this material will be greatly extended. The products of the clay beds located above Sacramento are declared to be equal in quality and beauty to those of any beds anywhere in the country and it is here that so much work is being done preparing to market the product on a large scale. The use of tiling and terra cotta facing has become very noticeable in San Francisco and is steadily growing.

Personal.

W. L. Cooper, manager of Robert W. Hunt & Company's European business, has returned to London after the completion of his annual business trip to the United States.

Architect Henry C. Smith has moved from the Mechanics Bank building to the Humboldt Bank building, San Francisco, where he has an attractive suite of offices. Mr. Smith's new phone number is Kearny 1745.

San Francisco Chapter, A. I. A.

A special meeting of the San Francisco Chapter, American Institute of Architects, was held at Tait's Cafe on Thursday evening, November 18th.

The principal business transacted was the election to Chapter membership of Messrs. August G. Headman and Albert Schroepfer and the election of Mr. John F. Stimson to associate membership; the adoption of the secretary's annual report; the appointment of Messrs. John Galen Howard, Louis C. Mullgardt, William Curlett and Henry A. Schulze as delegates to the Annual Convention of the Institute at Washington, D. C., December 14th to December 16th, and the appointment of standing committees to serve for the current year on the entertainment and reception of visitors and convention, legislative, commercial bodies, headquarters, competitions, fine arts and city adornment, building laws committee and the revision of the constitution and by-laws of the Chapter.

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UNSAFE BUILDING MATERIAL

Our attention has been called to the fact that since the rush of building operations began shortly after the fire of April, 1906, a very considerable quantity of faulty building material has found its way into consumption in San Francisco.

Some of this material was purchased because it was cheap. Some of it has cost contractor and owner all that first-class material could have been bought for. The unfit nature of much of it was fortunately discovered during construction, and it was thrown out, but it caused no inconsiderable delay and dissatisfaction. There is no doubt whatever that much of it has gone into buildings where it forms an element of serious danger.

There are many materials, the essential qualities of which mere cursory examination will not determine, but which can be determined at comparatively small expense by submitting them to properly conducted expert examination. Sometimes this examination is necessarily chemical or analytical. Sometimes it is physical, but of such a nature as to require special testing apparatus. Some large and continuous users of such materials, the great railway companies for instance, maintain testing departments equipped with both chemical and physical laboratories where they test almost all the materials and supplies they consume. It pays them to purchase protection and safety in this way. Many of the large cities of the East also maintain testing laboratories for proving the quality of the numerous building materials which they are compelled to purchase. The municipal government of San Francisco now has under way the installation of a plant of this description.

Architects owe it to their clients to see that proper inspection of materials is made before the latter are put into a building. Of course we don't expect that every architect will maintain his own private inspection bureau—that would entail uncalled for expense, but there are professional inspectors in every large city whose services may be had at small expense.

REINFORCED CONCRETE CONSTRUCTION AND THE STEEL INDUSTRY

A few years ago when reinforced concrete moved up to a place alongside of the other important structural materials in the building world, the steel manufacturers were very apprehensive as to the effect of this advance on their business. The bulk of the steel business had heretofore been in steel rails and structural steel members. Would the introduction of reinforced concrete wipe out the latter part of the steel business?

Time has answered the question in a way surprising and cheering to the manufacturers of steel. In the past several months the steel mills have not been running full capacity and the Iron Age, an organ of the steel trade, calls attention to the fact that the mills rolling steel reinforcing bars have practically supported the industry. Steel manufacturers have come to see that reinforced concrete requires steel bars. The special rolls, the additional attention necessary in getting the steel to conform to a certain chemical standard and the necessity of cutting the bars in various lengths all add to their cost. The mill gets a good price from the concrete people and takes off a fair margin of profit.

The growing popularity of cement plaster construction has increased the demand for steel fabric. Small concrete products require, in many cases, steel wire reinforcement. All these demands upon the steel industry operate to the profit of the mills and what at first appeared a menace has proved to be a blessing in disguise.

FIRE PREVENTION

The New York World declares that one of the most effective measures yet devised in the direction of fire prevention is the labelling of buildings that was suggested by Architect Fitzpatrick, of Washington, D. C., the Executive Officer of the Society of Building Commissioners.

The World quotes from that expert:

"It is immediately necessary that the authorities should conspicuously label every building of public or semi-public nature, just as to its class of construction, 'fire-proof,' 'ordinary,' 'dangerous.' As it is now, the term fire-proof is cruelly abused. It is applied where there is not the slightest foundation for its use and is made the means of obtaining tenants and occupants under false pretenses. A man with 'dangerous' affixed to his building would have difficulty in renting it and that would be a powerful incentive to him to at least make the building better if he did not absolutely eliminate it and build correctly. Then we should have the same municipal regulations that they have in most European cities relating to 'neighboring liability.' Here we have a selfish way of taking care of ourselves and letting the other fellow shift. There they make you responsible for any damage to your neighbor's premises or property that may result from a fire in your premises caused by your or your agents' carelessness or negligence. It makes people wonderously careful in handling their ashes, waste paper, etc. These neighboring damages are always collectible at law in Europe and the regulation is one of the most effective of fire-preventive measures."

A Tribute to Cement.

Architect Octavius Morgan, lately elected a Fellow of the American Institute of Architects, at a recent banquet of the Los Angeles Architectural Club took occasion to pay a tribute to cement, saying in substance:

"We have not thought much of cement in the past, but it is one of the most wonderful of materials. We in Los Angeles and in Southern California, have some of the best examples of plastic cement work in the country, yes, in the world. What has been accomplished is merely suggestive of what can and will be accomplished in the future with cement. You young men want to give it thought."

Mr. Morgan called attention particularly to the artistic possibilities of cement as a moulding material, stating he was astonished with the results that could be obtained with its skillful handling.

HEATING AND LIGHTING

THE LIGHTING OF CHURCHES*

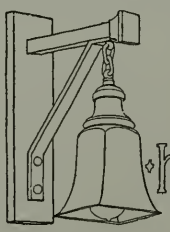
By Bassett Jones Jr., Consulting Electrical Engineer.

In this article no pretense is made of laying down any hard and fast rules governing the lighting of churches. Any generalization on the subject would be an absolute waste of time. Churches vary so widely in design, environment, and the uses to which they are put, that each problem becomes a distinct study in itself, and nothing more than suggestions as to the method of approaching each case will be attempted.

No other instance of the use of artificial light presents such inherent complications, or demands an approach from so many sides. In the first place, church lighting is only to a very minor extent an engineering problem—indeed this is true of any building possessing aesthetic features to any marked degree, and to make clear our attitude on this question of illuminating engineering we shall quote from a recent paper read by the author before the Illuminating Engineering Society: "The beauty and effectiveness of good architectural construction, both from aesthetic and utilitarian standpoints, depend upon a strict adherence to the principles of architecture outlined above, and the feeling of the design, dependent as it must be upon historical precedent, is bound by centuries of usage to certain effects of color and light which have become established because of their appeal to the sentiments aroused by pleasurable visual perception. The business of the illuminating engineer is to modernize old methods of illumination without destroying them. If we are to discard tradition altogether, then we may as well abandon the architecture of the past, and ignore its influence. This, as I have tried to make evident, is impossible, if not on aesthetic grounds, then on physiological grounds, and to deny its demands would be suicidal. * * * The illuminating engineer who imagines that he will be permitted to introduce anything radically new into the illumination of buildings possessing historic feeling is doomed to disappointment. Rather is it his duty to maintain and conserve that feeling in spite of modern appliances and means. * * *

"The 'feeling' of the design must be carried out consistently even to the last detail of the fixtures. It is the duty of the architect to see that this is done. His conception of the whole arrangement must include the lighting, for, as he sees it 'in his mind's eye,' so must it be seen objectively. The light that must be provided, its tone, its intensity, its quality, is a feature of his mental conception, and it is the ideal illumination

*Extracts of an article by Mr. Jones in The American Architect and copyrighted, by The Swetland Publishing Company.



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that the engineer must seek to approximate. Of course, he can only hope to do this when he, too, is able to see the design as the architect sees it, and not through the eyes of the illuminating specialist alone. The engineer must be able to discern where direct or indirect illumination is required, and the kind of fixtures associated historically and aesthetically with the general design by means of which he must obtain the proper results. * * *

"It seems, then, that a very important if not essential feature of the engineer's preparation is a study of the history of illumination and its relation to architectural design. He must make himself intimately acquainted with the means, methods and results of earlier work, and good work it is where any attempts were made to obtain adequate and suitable lighting. Because we alone can formulate and employ the laws governing the distribution of light, we must not think that good lighting has not been earlier achieved by empirical methods. We are simply in a position to do with less expenditure of energy what the masters have done in spite of their manifest limitations. * *

"The question as to the proper location and arrangement of fixtures then resolves itself into the question as to the way in which the design is to be seen. The proportions of the structure, its construc-

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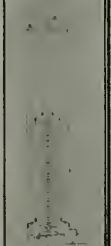

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tive lines and the points where they originate and end—these are to be brought out in relative prominence, and to do this properly the individual responsible for the lighting must be able to discern and select these features and modify his illumination accordingly. * * *

" * * * it is the writer's belief that no architectural design, conceived in the right spirit, and properly executed, can demand any suitable artificial illumination that is injurious in the optical sense. * * * Artistic illumination is, ipso facto, good illumination. And no illumination can be artistic that is not conceived as a feature of a truly artistic design."

It must be clear to everybody that no design is perfect that cannot be properly seen; for the perfection is not a quality that lies directly in the design, but is a quality of mental activities aroused in the judicial beholder when the design is presented as a stimulus to his mental functions. It is nonsense to talk of the beauty of an unseen or unheard work of art.

Thus, in architecture, it appears that the most important thing after production of a good design is to arrange it so that it can be seen as the designer means it to be seen, and to him this seeing is an integral part of his conception. The self-exploiting basis of art is emphatic in its demands. Granted, then, the importance of properly seeing a design, the next question is concerned with the means of providing proper illumination.

That the great architects of Greece and Rome and of the Renaissance period considered this matter of proper lighting of great importance, is evidenced by the thoroughness with which the illumination of each interior was worked out even to the smallest detail of the fixtures. Furthermore, the fixtures themselves were never an after-thought, but formed an integral feature of the entire design.

The preliminaries to the selection of a method of artificial illumination and the design of suitable fixtures consist in determining the character of the following factors:

1. The purpose indicated by the type of the structure. If the building is a church, to what denomination does it belong — Roman Catholic, Dissenting, Jewish, Christian Science, etc? The character of the service will be a prominent feature in the problem of lighting. A Roman Catholic Church having no congregation singing or reading will require but little light in the nave, and this of a subdued and quiet, religious tone. On the other hand, the chancel and altar, with its elaborate images and decorations is the most prominent point for the attention of the communicants, and requires a carefully planned and rich lighting effect.

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The service in most dissenting churches, particularly the Presbyterian, Congregational, Unitarian, Baptist, and Methodist, demand frequent use of the eyes by the members in reading responses and singing. Furthermore the symbolic features of the service and equipment so prominent in Roman Catholic and High Church Episcopal Churches are entirely absent. The lighting should, therefore, be ample for use and need not be employed primarily to accent the religious tone of the building.

In Jewish synagogues, on the other hand, we find the symbolism of early Eastern art and religions carried almost to the extreme. Each detail has its meaning determined by precedent even to the fixtures, and while a good general useful light is required by the congregation, much attention must be given to the study of special effects.

Buildings erected for the use of Christian Science and other similar modern sects are quite in a class by themselves, and require essentially modern treatment in both design and illumination.

2. The second broad preliminary consideration, after the general character of the illumination has been decided upon, has to do with the general form of the structure to be lighted. Is the design light or massive? And it must be understood that the weight of the design has no necessary relation to the size of the building—it is not measured in avordupois. Some small Norman churches are essentially massive in design, while some of the largest cathedrals, such as Laon, are particularly light and airy in feeling. The design will (or should) in each case represent the fundamental characteristic of the religious tone predominant in its period, and it is this tone that should be singled out and brought into prominence by the illumination. This effect can be produced principally by the adaptation of the quality and color of light to its surroundings, and by the use of shadows whereby the structural motifs can be given prominence either by bringing them into the high lights or by marking them off dark against a lighter background depending upon the specific conditions in each case. But it must be remembered that the shadows themselves must be luminous—not mere black patches of nothingness—and hence require careful detailed study. As we have above pointed out the design depends for its beauty upon the light enabling us to see it. The architect is thus largely dependent for his material upon light and shade. These are the scales upon which he builds his symphony and any false note may destroy its harmonies and ruin its proportions.

3. Our third consideration takes up the question of the relation of the decoration to the structural lines. In good design, where the structural lines form the chief beauty of the structure and where proper care has been taken to accent these lines, usually the decoration will be sufficiently pronounced. If, however, decoration is used, as it often is, to cover up a paucity of conception it is sometimes necessary to accent the decoration in lieu of the structural motif; otherwise a feeling of unbalance may result. Or the very reverse of this treatment may be necessary.

4. A fourth consideration of special importance in church lighting relates to

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the matter of perspective. It is one of the fundamental physiological factors of illumination that bright points of light brought within the field of vision produce a corresponding loss of detail in the remainder of the field, due to the automatic closing of the iris. This shuts off the quantity of light coming from less bright objects and may reduce the visual sensation they produce below the threshhold of perception so that such objects are not seen at all. Lights so placed become unduly accented and appear much nearer the beholder than they are in reality.

It is therefore evident that we should avoid all horizontal rows of lights, particularly if placed low down and always if their intrinsic brilliancy cannot be materially decreased by the use of large globes, or deep reflectors. The use of such auxiliary globes or reflectors is usually an unfortunate feature as they destroy the largely decorative feature of the bare lamp and are often too conspicuous from an architectural standpoint.

Vertical rows of lamps are not generally open to the same objection, as the lines they accent are not normally parallel to the axes of the eyes and so do not tend to reduce the perspective to such an extent as in the case of horizontal rows.

The above notes may serve to indicate briefly where our problem lies—it is hardly expected they will even do that adequately, any detailed discussion being out of the question within the space available.

* * *

Of course the principal difficulty in the use of fixtures is the fact that if hung low enough they interfere with the view, and if hung high people sitting in the back of the church will have the direct light in their eyes. If hung near the side walls or nave columns so as to be out of the view then those in the center pews get too little light. Again the architectural treatment of the fixtures made necessary by the environment may introduce still further difficulties in our efforts to secure good lighting. However, as we have said before, no definite rules for securing results can be given as each case must be studied in the light of its own merits. Good lighting is largely

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the result of the exercise of good taste and good judgment and only to a small extent is it the result of mathematical calculations.

Regulating Noise From Plumbing.

A very disagreeable feature of plumbing work in the home is the noise due to the operation of plumbing fixtures. In many residences the operation of the water closet in the bathroom can be heard all over the building. Such noise, however, is unnecessary and can be avoided by intelligent design of the system and judicious selection of fixtures, says a writer in a recent issue of "Shoppell's." It is well to be acquainted with the various closets that are on the market, so that when a noiseless one is wanted it can be specified by catalogue plate and number. But even when the closet is noiseless in operation, noiseless plumbing is not assured unless the supply and waste pipes are likewise proportioned to their several uses. If the supply pipes are too small, there will be a disagreeable hissing sound when water is being drawn, not only at closet fixtures but at the other points in the building. Further, if the pressure is high and properly designed faucets or suitable air chambers are not provided, there will be a pounding noise when a faucet is closed, due to water hammer. These sources of trouble can be eliminated by using slow-closing faucets and large-size supply pipes to the various fixtures.

The noise of water from closet fixtures flowing through the soil can be decreased in volume by using three-inch soil pipes in the partitions, and the remaining noise can be almost entirely done away with by filling the space around the pipe and between the laths and plaster of the partition with some non-sound conducting substance.

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Electrical Contractors Organize.

By F. V. Meyers, Secretary.

ON October 19th electrical contractors from various places in California, including San Francisco, Los Angeles, San Diego, San Jose, Sacramento and Oakland, met at dinner in the private dining room of the Argonaut Hotel, San Francisco, for social intercourse and for the further purpose of considering the question of organizing a State Association of Electrical Contractors. The persons, firms or corporations (as the case may be) represented included Woodill & Hulse Electric Company of Los Angeles, Southern Electrical Company of San Diego, E. C. Wakeland of Oakland, R. W. Meyers of Fruitvale, W. W. Hanscom, president of the San Francisco Branch of the National Electrical Contractors Association, Charles E. Wiggin, Treasurer of the San Francisco Branch of the National Electrical Contractors Association, Hanbridge-Loyst Electric Company, Latchem Engineer & Electric Company, Levy Electric Company, National Electric Company, Century Electric Company, Standard Electric Company, Butte Engineering & Electric Company, California Electric Construction Company, Central Electric Company, Independent Electric Construction Company, McFell Electric Company, Electrical Supply Company of Sacramento, Jerome N. Bachman, A. E. Brooke Ridley, F. V. Meyers, Secretary of the San Francisco Branch of the National Electrical Constractors Association, and others.

After exhaustive discussion temporary organization was effected and a committee on permanent organization and by-laws was appointed. The meeting then adjourned to meet again on the following day at the same place.

Permanent organization was effected with the following officers:

President, W. S. Hanbridge.
First vice-president, W. B. Woodill.
Second vice-president, C. H. Heilbron.
Secretary-treasurer, F. V. Meyers.
Sergeant-at-arms, E. C. Wakeland.

The association has a roll of approximately sixty members throughout the State of California. Districts are being organized in the principal cities and towns, pursuant to the plan named in the by-laws, and organization is being earnestly carried forward. It is believed that within a very short time the organization will be in position to greatly benefit its members in every direction. Its policy is intended to be conciliatory toward all opposing interests, while at the same time vigorous in protecting and advancing the interests of itself and members.

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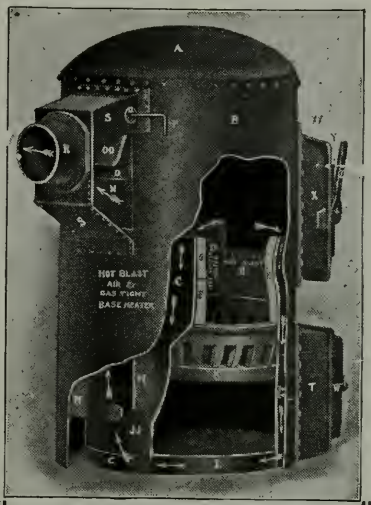
Starting the New Furnace Right.

THE first few days a new furnace is in operation are apt to determine its character, if furnaces have a character. If the furnace starts off well the members of the household will be convinced that it is a good one, and it will require a number of misfortunes to remove the favorable impression. On the other hand, if the furnace behaves in an improper manner at first, doubts may be entertained regarding its future warming abilities. It is supposed the dampers in the hot air pipes have been turned in the proper direction to allow the heat to pass, and that the damper rods were put in the proper way, so the handle or ring will indicate whether the damper is closed or open. A mistake made in putting in a damper rod may cause much trouble, as the damper will appear to be open when it is closed, and much furnace talk may be required to explain why heat does not come up the register. If the cold air box is provided with a slide or damper, such appliance may have been left closed, so the furnace does not receive a supply of fresh air There may be a wide crack under the hall door so the outer air may enter and quietly run down the hall register, thus preventing any warm air from coming up. Thus the hall pipe may be acting as a cold air box.

It has been known for several years that the human eyes and nose are not pleased with smoke. On this account, if for no other, the chimney should be examined before connecting the smoke pipe. The chimney flue is liable to become stopped up by soot, mortar or even bricks which may have been dropped by the mason or fallen from the top. By building a small bonfire in the bottom of the chimney the draft can be tested. It may be well to attach a piece of iron to a rope, then proceed to the top of the chimney and lower the iron. If it arrives safely at the bottom of the chimney without encountering any obstruction, one may infer the flue is clear. If there are any openings in the furnace chimney, other than the one used by the furnace, they should be closed. While it may be supposed that all smoke pipe fits tight at each joint, it is well to be certain that a tight joint has been made where the smoke pipe joins the surface and also where it enters the chimney.

If the attendant is not accustomed to the management of a furnace, or does not take sufficient interest, ashes and clinkers may be allowed to accumulate in the firepot to such an extent that a good fire is impossible. Some houses are so constructed that grates are placed in a number of rooms, and if these grates are not in use, too much air may be carried up the various flues, resulting in a great loss of heat.



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By the Way

Some Industrial Information Worth the While

Remarkable Success of the Los Angeles Pressed Brick Company

LIKE fiction reads the story of the remarkable success since its organization of the Los Angeles Pressed Brick Company. Incorporated in 1887, its growth has been phenomenal and today it stands out by itself as the operator of the largest brick manufacturing plant in the West. Good management and a thorough knowledge of the business on the part of the promoters are the main factors which have contributed to the success of this concern. With plants in Los Angeles, Santa Monica and Richmond the company is in a position to fill orders to points as far north as Vancouver, B. C., and as far east as Salt Lake City.

The Richmond plant has contributed not a little to the rebuilding of San Francisco. It is here that the company makes its highest grade of red pressed brick, experts having pronounced them by all odds the finest dry pressed brick produced on the Pacific Coast.

Naturally the company is very much pleased with the recognition its product has received at the various expositons. At the recent Alaska-Yukon-Pacific exposition in Seattle, the Los Angeles Pressed Brick Company was given the grand prize for its splendid display of pressed brick. The company was given the gold medal at the Lewis and Clark exposition at Portland in 1905, the highest award; a silver medal at the Louisiana Purchase exposition at St. Louis in 1903; and first prizes at the California State fairs at Sacramento in 1907, 1908 and 1909, on pressed brick and fire brick, and other exhibits of lesser importance.

The company's largest factory is at Los Angeles, where about ten acres in the heart of the manufacturing district are occupied. Employment is given to from one hundred and fifty to two hundred men. At this plant is manufactured pressed, glazed, enameled and ornamental brick, hollow tile fireproofing, firebrick and fireblocks, roofing tile in all the popular patterns and in both the natural red color and green glazed, mantel tile in a large variety of sizes and shades, and also the high art Faience tile. One of the latest original and exclusive creations of the company is the popular Silver Gray Glazed brick which is, indeed, a revelation in artistic brick work.

At the Santa Monica factory about seventy-five men are employed. Here the company owns fifty-seven acres of clay especially adapted for making a high grade vitrified block. The third plant, at Point Richmond, Contra Costa county, directly on the San Francisco Bay, has already been referred to. Common building brick and red dry pressed brick are made here. This plant is considered a model one of its kind, being built within the last three years and embodying all the up-to-date devices in brick manufacture. This plant is run by electrical power entirely.

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This half tone shows the U. S. Post Office, San Francisco, restored after the fire and, in which a great many of our **white enamel clay brick** both square and molded were used.

We manufacture at Stockton all kinds of *clay pressed brick*, including *mat glazed* (all colors) as well as *fire brick*. We have our *sandstone brick* factory at Antioch and can furnish you with **what architects and contractors tell us is the best sandstone (*sand-lime*) brick on the market.**

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The company obtains its clays from five different mines situated in four counties in Southern California. At the recent exhibition of the San Francisco Architectural Club a fine display of the company's products was made and it proved most interesting to the thousands of visitors.

Some of the many fine buildings in and around San Francisco erected of Los Angeles pressed and enameled brick and hollow tile are the following: Hewes building, Mechanics Bank building, Odd Fellows building in course of construction, Taft-Pennoyer building, Oakland, Berkeley National Bank building, Berkeley, and all the hollow tile entering into the construction of the Phelan, Gunst, Taft-Pennoyer, Royal Insurance and White House buildings.

Paving brick has been shipped to San Francisco, Oakland, Sacramento, Berkeley and Santa Cruz with orders totaling upwards of a million for Portland delivery. The company's brick is adapted not only for the heaviest down town traffic in large cities, but for residential street work and private driveways as well.

Faience tile is also being manufactured, and this is a new departure of the past few months. Recently experiments were begun to see what could be accomplished in this field at the Los Angeles plant. After a series of experiments the company's chemist developed a decorative faience tile of exceedingly handsome design and color tone, which is to be used for interior decoration in the Utah Hotel Company's building under construction at Salt Lake City from plans by Architects Parkinson & Bergstrom of Los Angeles.

The company reports a constantly growing interest in the Southwest in vitrified brick for paving purposes. Property owners in this territory, as elsewhere on the coast, have come to the same conclusion as those of the east that first cost in paving materials is not the only criterion in determining the economy of street surfaces. The long life and minimum cost of maintenance of a brick surface make this paving material really the cheapest in the course of a few years. In the east many rural committees are now using brick for surfacing country roads, the improved surface being made in narrow widths of eight to twelve feet.

Concrete Telegraph Poles.

Armored concrete continues to enlarge the field of its application. The experimental concrete telegraph poles erected by one of the great railroads running between Chicago and the Eastern coast have proved so successful that the company has decided to extend their use gradually over its Western lines.

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Warehouse of the Strable Manufacturing Company, Oakland.

Hardwood Company Fills Many Contracts.

The Strable Manufacturing Company succeeds the G. H. Brown and Brown-King Lumber Company of Oakland. The old offices and warehouse on Water street, near Washington, are retained, but the storage capacity has been increased from six to thirty cars. The company carries a complete stock of all the popular hardwoods and is in a position to ship on short notice to almost any point in California. Special attention is given to orders for high-grade flooring and shipments are made in carload lots direct from the mills.

Among the buildings furnished with hardwood flooring are the White House, Newman & Levinson, David Schonwaser building, Cliff House and Emporium, all in San Francisco, the State Hospital buildings at Agnew, which order amounted to something over thirty carloads; Home for the Adult Blind, Washington and Lincoln schools in Oakland, the Richmond High School, new hotel at Stockton, bank and office building of the Stockton Savings and Loan Society, State Hospital at Napa and the Merced High School.

The Strable Manufacturing Company will handle such well-known hardwoods as mahogany, oak, walnut, cherry, maple, ash, hickory, birch, poplar dowels, ebony and rosewood.

Ventilating the Palace Hotel.

The Robert Dalziel Jr. Company has finished work on the ventilating system in the new Palace Hotel, San Francisco. The system is considered the most perfect of any that has ever been installed in the Bay City, as well as the largest, and in planning it provisions have been made for the additions to the hotel contemplated as soon as the present structure is occupied. When completed the ventilating system will have taken 105 tons of galvanized sheet-iron, and twenty direct-connected electric fans, ranging in size from 60 to 150 inches. One of the features of the ventilating system is the provisions that have been made for ventilating the bathrooms, of which there are at present 650. An exhaust register is placed in the ceiling of each room and five fans on the roof are used to discharge the air. Many of the rooms—such as the grill rooms, ladies' parlor and ball rooms—have separate systems. The intake ducts lead from the roof to the basement, and the fresh supply is purified by passing through three cleansers with a capacity of about 250,000 cubic feet per minute.

Thirty-one Miles of Pioneer Roofing.

The Pioneer Roll Paper Company, manufacturers of ready roofings, roof paint and insulating papers, and whose factories are located in Los Angeles, recently received an order from the Associated Supply Company, of San Francisco, for 400,000 square feet (31 miles) of 32-inch roofing, to be used in covering their large oil reservoirs in Kern county. The size of this order, and the source from which it came, is certainly a strong endorsement of the quality of Pioneer Roofing.

The Pioneer Roll Paper Company will be glad to send their 32-page illustrated booklet on roofs and roofings to anyone who will write for it, mentioning the Architect and Engineer.

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Pureclay Brick.

The Pureclay Brick and Tile Company, whose offices are at 103 Main street, San Francisco, is having extensive improvements made to its big plant at Hilton, Cal., and when the work is finished the company will have one of the best equipped clay yards on the Pacific coast. By reason of the superior grade of clay found in the company's mines it is in a position to turn out one of the best stock bricks on the market. Proof of this is had in the following letter from Hoyt Bros., well known Santa Rosa contractors, who have used the brick on a Masonic temple at Sonoma:

November 2, 1909.

Pureclay Brick & Tile Company,
103 Main Street,
San Francisco, California.

Gentlemen:—We will state for your benefit, and as requested in former communication, that the brick that you have shipped us are the best brick we have ever received from your company, and are the best we have seen in our building experiences on this coast.

Everyone who has seen the brick, including the architect of the building in Sonoma [Masonic Temple,] has spoken very highly of them.

Very truly,
HOYT BROS.
By Henry A. Hoyt.

Hoyt Bros. stand very high with leading architects in San Francisco and their letter should carry considerable weight with those in need of a first-class stock brick. The improvements that are under way at the Hilton plant will add materially to the company's capacity. There will be twenty continuous burning kilns in operation, supplying 30,000 brick per day or over, 1,000,000 a month. Something like $30,000 is being spent in rehabilitating the plant.

E. T. Maples, formerly with the California Brick Company at Antioch, and a brick man of practical experience, is now in charge of the plant as superintendent, while the management of the San Francisco office has been turned over to C. W. Randall who was formerly with the Bonner & Marshall Company, face brick and roofing tile manufacturers, of Chicago, Ill. Mr. Randall says his company is in position to take orders both large and small and fill them promptly as they have splendid railroad facilities and it is the intention to have a yard at North Point and Taylor streets where a sufficient quantity of brick will be stored to take care of immediate wants.

The plant at Hilton includes some 46 acres with a clay bank 70 feet in depth.

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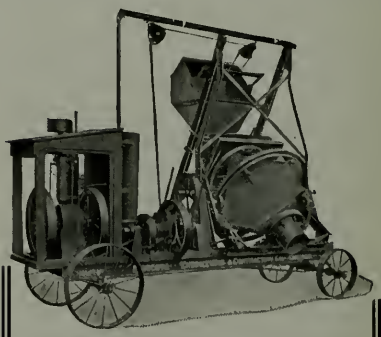

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Inspection of Building Material.

Architects are fast beginning to realize the necessity for proper inspection of building material, not only in the interest of their clients but as a safeguard against possible complaint of the architect's incompetency.

For the benefit and convenience of engineers, architects, contractors and others who cannot maintain their own testing plants, the engineering firm of Robert W. Hunt & Company of Chicago, has located branch offices and testing laboratories in a number of large manufacturing and consuming centers — New York, St. Louis, Pittsburgh, San Francisco, and also in Montreal and London.

Their Pacific Coast laboratories are at 425 Washington street in San Francisco. The volume of the inspection work entrusted to them is such that they are enabled to maintain a large corps of experts, resident at or in close proximity with all the large foundries, rolling-mills and fabricating shops of the United States and Canada, with a number also in England, Belgium and Germany. Their very extensive and perfect system renders it possible to do the most accurate expert work for such reasonable cost, that cautious construction men feel that they cannot afford not to avail themselves of the protection thus secured.

The name and reputation of Robert W. Hunt & Company are such as to require no special commendation from the Architect and Engineer, and this note is intended for local users of building materials who may not have been advised of the location of the San Francisco branch of the firm, and who are referred to the advertisement at the top of this page.

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Plant of White Bros., San Francisco.

Mammoth Stock of Hardwoods.

THE above cut shows the establishment at Spear and Howard streets, San Francisco, of White Brothers, pioneer dealers in hardwood lumber. This firm was established in 1874 by Peter and Asa L. White. At that time there was very little hardwood used in San Francisco except by the wagonmakers and the few furniture factories, the latter making nearly all of their product out of walnut, now so highly considered by connoisseurs and greatly prized wherever it is found in the few old mansions which escaped unscathed in the fire of 1906. As the years went on and conditions changed, more hardwood was used in the interior finish of residences, stores and office buildings, and by the change in freight rates which allowed the cheaper Eastern made furniture to come into the California market, furniture making here became unprofitable and furniture factories either went out of business or became general woodworking plants.

Walnut, which was the queen of cabinet woods, became scarcer and scarcer and the price advanced from ten cents per foot, at which it was sold in the later seventies and early eighties, to twenty and twenty-five cents per foot today. Walnut gradually went out of fashion and quartered oak and mahogany have taken its place. The consumption of oak and mahogany has been enormous in the last ten years. Ash, hickory and maple for wagon work are also used to a very great extent, but oak and mahogany are the kingpins of hardwood, although birch is not far behind.

White Brothers commenced carrying wagon material and cabinet woods in a small way, and by paying particular attention to the needs of the trade as they became more diversified and the demand increased, they have grown to be the largest hardwood house west of Chicago. Their market extends from Cape Nome to Valparaiso and as far east as Montana and Utah. The stock carried at their main yards in San Francisco amounts to about two million feet, but the ground space at this location is not sufficient to contain all the lumber they need in their business and they have at various places in the vicinity of the main yard, smaller yards to accommodate their stock. Besides this they take advantage of the excellent warehouse facilities offered for the finer grades of lumber which need protection from the weather.

In addition to the yards in San Francisco, White Brothers operate a sawmill at Petaluma where they have rail and

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Write or call for descriptive circulars and other data about these beds.

water shipping facilities. At this point is also maintained a large yard for seasoning the lumber which is sawed up at the mill. They carry there a very large stock of Jenisero, Primavera, and Spanish Cedar, as well as oak imported in logs from Japan. This yard generally contains over half a million feet of hardwoods.

White Brothers have in their yard, in addition to the hardwoods of the United States, such as oak, ash, hickory, birch, walnut, etc., etc., mahogany from Mexico, Central America and Africa, not to mention Philippine mahogany; Teak from Siam, Koa from the Hawaiian Islands; Primavera and Spanish Cedar from Mexico, Ironbark, spotted gum and other species of Eucalyptus from Australia; oak from Japan; ebony from Senegambia; Circassian walnut from the Levant, and Boxwood from Turkey.

The Pyrmont Brick Company.

A company that is commencing to make a mark for itself in the Lincoln, Cal., district is that of the Pyrmont Brick Company, a concern that has only recently entered that field, and which is now busy erecting suitable buildings for the great industry that is to be carried on. The plant is not in full working order yet and it will probably be almost a year before the finished products will be placed on the market but in addition to making rapid work on the plant, development work at the beds is being carried on and several carloads of clay are being shipped out daily. A spur track from a railroad has been built to the beds making transportation easy. President M. J. Dillman is on the ground most of the time, directing operations and making a study of the different varieties of clay found in the pits.

Southern Pacific Shops.

Work on the Visitacion yards of the Southern Pacific Company, which was stopped several months ago on account of the financial stringency, has been started again. Surveyors have been busy for the last few weeks preparing plans for the large roundhouse that is to be erected and the work of completing the other shops, foundations of which have already been laid, is under way.

The tract adjoins the Pacific gas and electric company's plant and it is estimated when all the buildings are completed and the yards in running order that more than 6,000 men will be employed in the valley. There are now two tracks through the hills to this point and another tunnel is being cut for two more tracks. Twenty-five miles of track are down now and thirty more are to be laid shortly.

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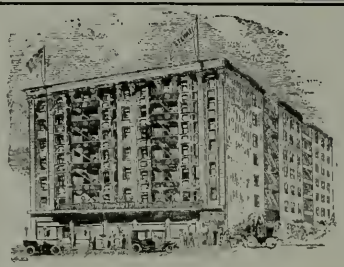

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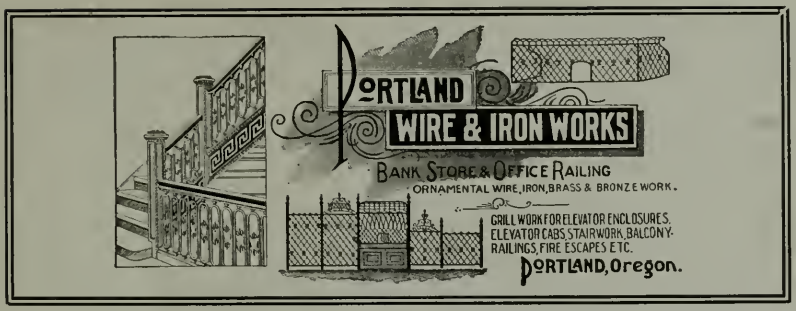
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An Electric Fountain.

Out of fifteen or more different designs submitted, the board of park commissioners of San Diego selected that of Architect Irving J. Gill for the $10,000 electric fountain which is to be erected in the plaza with funds donated by Louis J. Wilde.

A few changes from the original design are suggested by Architect Gill. Instead of Mexican onyx Vermont or Italian marble will be used in its construction and it will be octagonal, instead of round, in shape, but the general appearance will be practically the same.

Another change he proposed was that the lion heads at the sides of the base be eliminated and that sheets of water flow between the columns and over the base into the large basin, instead of flowing from the mouths of the lions.

On a marble base according to Mr. Gill's design, will stand six columns of marble supporting a frieze which will play an important part in throwing sheets of water over the fountain. Above the frieze will be a large dome of amber glass interspersed with bright oranges and emerald greens, the glass to be cut in small sections and secured in copper frames. Over the dome of glass there will be a large gilded eagle with outspread wings. The pedestal, columns, dome and eagle will stand about 25 feet high over all in the center of a circular basin about 20 feet in diameter.

The capitals of the columns, the copper frame work of the dome and the eagle will be overlaid with gold leaf, producing a sparkling effect when lighted up by the sunlight in the day time and by electric light at night. The large basin will be of reinforced concrete, veneered with marble. The water will come out at the feet of the eagle and descend over the surface of the dome, frieze and columns. Eight streams will be thrown toward the columns from the edge of the large basin and eight sheets of water will flow over the base into the large basin.

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Swell Yacht for L. A. Norris.

L. A. Norris, Western sales agent for the Clinton fire-proofing materials, with headquarters in San Francisco, is having built for his private use a fine schooner yacht which is expected to eclipse anything now on the coast. The craft is being turned out by Rice Bros., well-known ship builders at East Booth, Me., and when finished will make under its own sail and power the 13,000 mile trip around the Horn to San Francisco Bay.

The dimensions of the yacht will be 91 feet 6 inches over all, 64 feet water line, 19 feet breadth and 11 feet draft. It spreads 3,457 square feet of canvas in the lower sails and is equipped with a 30 horsepower gasoline engine for auxiliary power. The boat will be flush deck, with a small cockpit for steering.

The companionway leading to the cabin will be just aft of the main mast and lead down into a small passageway, where there will be a stateroom on the starboard side and the bathroom, lockers and chart table on the port side. Aft of this, taking up the full width of the schooner, will be the owner's stateroom.

Forward of the passageway will be the main cabin, almost amidship, equipped with book cases, lockers and a space for a piano. Opening out of it on the starboard side will be a stateroom for a maid, while the captain's room and another toilet will be on the port side.

In a good sized galley aft, the engine will be placed. The forecastle, with four berths, and two in the galley, will give quarters for a crew of six.

All the interior finish except the galley and forecastle will be in white paint, with mahogany trimmings.

Six-Story Hotel.

Architects Train & Williams, 226 Exchange building, Los Angeles, have made plans for a six-story and basement European hotel to be erected on Olive street, just south of Pico, Los Angeles, for W. W. Paden. It will be brick with pressed brick front, and will have Oregon pine trim, and be equipped with elevators, steam heat, electric fixtures, baths and plumbing. It will contain 128 rooms, and will cost about $65,000.

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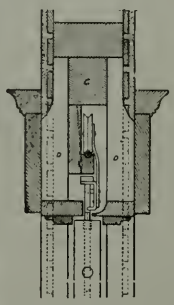

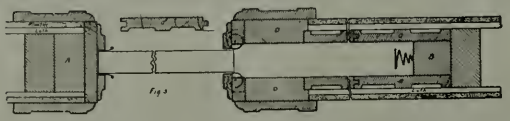

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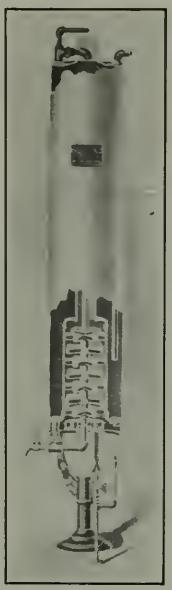

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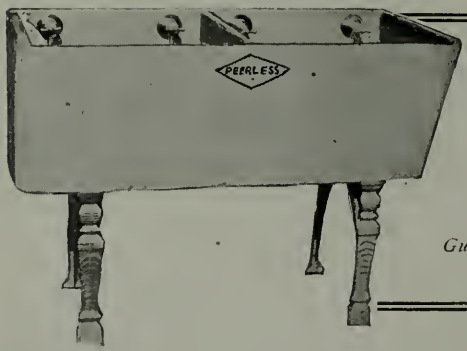

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Large Eastern Firms Prepare for Increased Business.

Mr. J. E. Dwan, known to most architects throughout the United States as the "Luxfer Prism Man," has opened offices and factory at Third and Tehama streets, San Francisco, under the firm title of J. E. Dwan & Company.

Mr. Dwan is the direct representative of a number of large Eastern firms and the object of the new company is to facilitate the handling of the California business of these firms for the benefit of their clients and customers.

The factory on Tehama street is fully equipped and a large stock of the prism units of all the various angles and shapes are carried as well as forms, tools, etc., for the installation of the well known system of reinforced concrete sidewalk lights.

The factory is also equipped with a stock of White Sanitary Glass with facilities for cutting, drilling, and grinding the same.

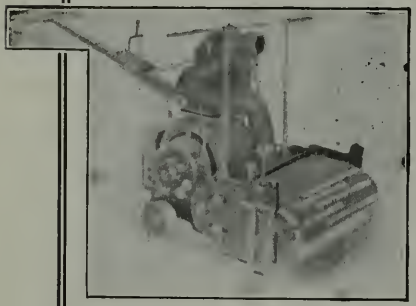
Toch Bros., the inventors of the famous R. I. W. damp resisting paints, manufacture special paints for every conceivable purpose and Mr. Dwan, who has made a special study of dampproofing and waterproofing, will be of much assistance to Toch Bros.' clients through his familiarity with these materials. Mr. Maximilian Toch, the chemist of the firm of Toch Bros., is now on the coast studying the conditions of climate and their effect upon the building materials in use, for his better understanding of the special requirements on the Pacific coast.

As engineer for E. J. Winslow, Mr. Dwan carried through the waterproofing of the basement of the Royal Insurance building in San Francisco. This basement being sunk in what was once the bay of San Francisco, is thirteen feet six inches below the level of the bay. The floor of some of the pits is subject to a lifting pressure of 800 pounds per square foot. This entire basement was waterproofed on the inside surfaces of walls and floors by the hydrolithic cement system. The waterproofing is always exposed and easily repaired in case of damage by earthquake or fire, and much floor space was gained.

The new company will also represent the Mound City Roofing Tile Company, and the Detroit Steel Products Company.

Mr. Dwan came to San Francisco about two years ago and was connected with the Willkomm Building Supply Company, as treasurer of that corporation, until its dissolution last month and has made many staunch friends by his earnestness and frank good fellowship.

JUST THE THING!



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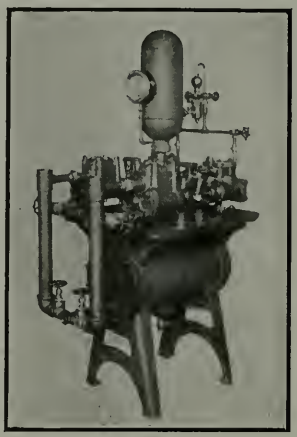

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FAN SYSTEMS A SPECIALTY

Some Features of the New Building Laws of San Francisco.

SAN FRANCISCO has some brand new building laws which are expected to work great benefit to the city. The old laws in many respects were a hindrance to architects and builders, possessing many features that were entirely impractical. The class C building question is disposed of in the following provisions:

Class C buildings shall be built with brick, stone or concrete walls supporting the adjacent floor loads and with the interior floor loads supported by studded partitions, or by wooden or steel or cast iron columns and wooden or steel girders. Floor joists may be of wood.

The limit of height shall be 84 feet, if metal lath be used on all floor and ceiling joists, girders, studding, wood furring and soffits of stairs. The limit of height shall be 55 feet if wooden lath be used, or if not lathed; but in no case shall more than four stories be included in this height.

Class C buildings may be built to the maximum height without lathing if the interior is of mill construction. Class C buildings may be built anywhere in the city.

There are special provisions concerning reinforced concrete construction.

The following is of general interest:

Reinforced concrete walls shall be at least six inches thick. If the area of wall surface included between any two adjacent wall columns and adjacent floor girders exceeds 300 square feet and is less than 400 square feet, the thickness of the wall shall not be less than eight inches. If the area exceeds 400 square feet, the wall thickness shall not be less than 12 inches, supported on the frame at each story.

In reinforced concrete walls the area of steel reinforcement shall aggregate one-half of 1 per cent of the area of the concrete, and may be placed vertically or horizontally, or part vertically and part horizontally.

No reinforcement shall be spaced more than 24 inches apart. Additional reinforcement shall be placed around openings, and all reinforcement shall be wired at each intersection. All reinforcement shall be rigidly connected at columns and girders to the steel frame.

Reinforced concrete walls may be built in the form of bearing walls of uniform section, and of same thickness required for brick walls.

If walls are built of piers and connecting walls the piers shall be calculated and constructed as columns. The connecting wall, if built of reinforced concrete without windows, may be considered as self-supporting, in which case the thickness shall be six inches in the upper 40 feet, followed by an increase of three inches in thickness for every additional 40 feet height.

Where such walls are pierced by openings for doors and windows the entire loads shall be concentrated on the piers, which shall be proportioned as columns.

A wooden building is classed as one having exterior walls or a portion thereof constructed of wood. Wooden frames or frame or wooden buildings covered with metal, plaster, ties or terra cotta, or veneered with masonry, shall be deemed to be frame or wooden structures. No frame or wooden building now existing within the fire limts can be enlarged or built upon, nor can any frame or wooden building now existing within the fire limits be repaired without a permit from the board of public works. The walls of frame or wooden buildings must be constructed with studding, covered with weathered boarding on the outside and no uncovered studding can be placed against the wall of an adjacent building or structure. Provision is made for frame factories that are more than two stories high as follows:

All frame or wooden buildings more than two stories high hereafter erected or enlarged to be used as factories, shall be constructed as follows: The weight of all the floors shall be concentrated at

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certain points, and no support shall rest directly upon a stud wall, but all beams, girders and girders supporting floors shall rest directly upon posts. Said beams and girders supporting floors shall not be more than nine feet apart; upon these shall rest the floor, which shall extend from one girder or beam to another, and shall not be less than of three inches thick plank. Planks shall be laid to the ends of the timbers. The filling between posts and walls shall be built of not less than 2 x 4 inch studs, 16 inches from centers.

Much interest is found in the rule concerning theaters. Every theater hereafter erected to be used for theatrical or operatic purposes must be constructed in accordance with the requirements of the ordinance relating to class A or steel frame construction.

In the matter of safeguards for fire for both public and private buildings the new law provides that all existing buildings and those hereafter erected exceeding 100 feet in height shall be provided with such auxiliary fire apparatus and appliances as wrenches, spanners, fire extinguishers, hooks, axes and pails as may be required by the chief of the fire department; all of said apparatus to conform in design to those in use by the fire department.

The ordinance adopted by the supervisors calling for the removal of all the buildings erected in San Francisco since April 18, 1906, in violation of the building law and ordinances of the city and county is made a part of the law and the date for removing all such structures is May 1, 1910.

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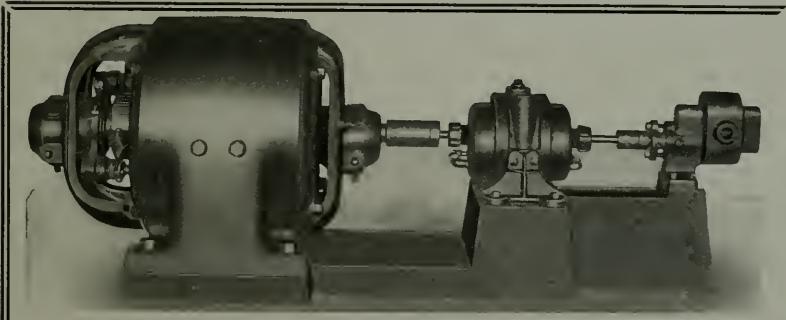

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Showing Bolt in Position

The Russwin Panic Exit Bolt.

The Russell & Irwin Mfg. Company, New Britain, Conn., San Francisco and New York, is making the Russwin Panic-Exit Bolt, which, as the name implies, is intended for use on schoolhouse, theater, assembly hall and public building entrances and exit doors. The construction of this bolt is such that the slightest touch on the bar, which extends horizontally across the face of the door, will instantly release the bolting members and open the door. In the various types of locking mechanism ordinarily in use on entrance and exit doors the pressure against the door by a panic-stricken audience will almost invariably cause a binding of bolts, making it impossible to open the way to safety. With the Russwin Panic-Exit bolt any pressure upon the door accelerates the unlocking action. This device is sensitive in action yet most substantial in construction, all parts being made of solid bronze metal castings with the exception of the bolt heads which are hardened steel, each part machined and carefully fitted. Various types of this bolt are made to meet various requirements. For fire exits a bolt allowing exit at all times but permitting no entrance; for double entrance doors the bolting mechanism on the dummy half of the door and a Russwin unit lock set on the active half; both doors in case of necessity being thrown open by pressure upon the bar extending across the face of the dummy half. For classroom or entrance doors the bolt has a side-latching mechanism operated from the outside by a knob and inside by the usual bar across the face of the door. All types while operating in different ways secure the instant releasing and opening of the door.

Do High-class Decorating.

Pfister & Company have reorganized, with Jean Pfister, president; O. J. Freeman, vice-president, and O. M. Kendall, secretary and treasurer. This firm is fast gaining an enviable reputation as artistic decorators and high-class painting contractors. Their specialty is store decorations. Recent contracts include the interior painting of the Baldwin Piano house on Sutter street. Work will be taken direct from the owner or through the architect.

Large Brick Structure.

A brick structure to cover a lot 75x115 feet in the north line of Clay street near East street, San Francisco, is being erected at a cost, including the land, of $100,000. It is to be a two-story building with elevator and will contain four stores and seventy rooms. The lot runs through to Commercial street, so that the building will have two frontages. Frank S. Holland is the architect.

Vacuum Company Moves.

The San Francisco Compressed Air Cleaning Company has moved from Montgomery street to 397 Sutter street, southeast corner, San Francisco, where a handsome suite of offices has been leased.

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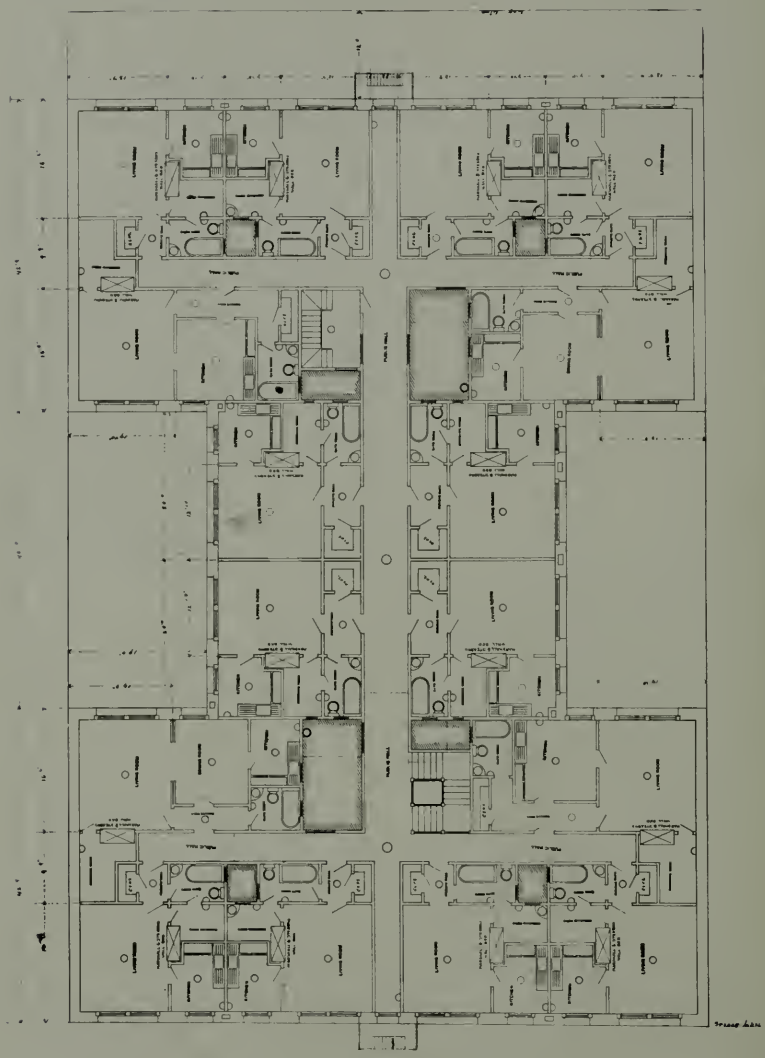
Popular Two-Room Apartments.

THE illustration above shows the Turk street elevation, San Francisco, of a handsome Mission style apartment house being erected by L. H. Sly and which is equipped with the Marshall & Stearns Improved Patent Wall Bed. As will be seen by examination of the floor plan, every bed has direct ventilation from the outside, making perfect sanitation without the usual "airing inconveniences." Special attention is called to the dressing room arrangement, as shown in the floor plan, and which is carried out in each and every one of the two-room apartments. This dressing room arrangement is an entirely new one for San Francisco.

The chief objection to a two room apartment in the past has been the fact that there was no privacy.

In this case Mr. Sly, who has probably had more experience than any other one man in the city, in this line, has built in the dressing room what is really a large closet, but has given his tenant, so far as privacy is concerned, all the conveniences of an additional room. One will notice that this dressing room is connected direct with the bath room, which connects with the private hall.

The offices and show rooms of the Marshall & Stearns Company are on the eleventh floor of the Phelan building, San Francisco.



Floor Plan, Apartment House for L. H. Sly, Showing Wall Bed Equipment.

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The Western Asbestos Magnesia Company, exclusive agents for the Philip Carey Company's products, have enjoyed a most prosperous year. The rapid growth of their business compelled them to secure larger office quarters, and they are most centrally located in the Balboa building, corner Second and Market streets, San Francisco.

The members of the Western Asbestos Magnesia Company are well and favorably known in the asbestos business, twenty years' experience having given them an undisputed reputation for superior work in the insulating line.

They carry a complete stock of the following materials, ready for immediate delivery: Asbestos and magnesia pipe and boiler coverings; brine and ammonia cork pipe coverings; granulated cork and mineral wool; asbestos packings, paper, millboard, cements and fibres; Linofelt for sound deadening; Carey's Standard Roofing and Roofing Materials.

Samples of the above products, catalogs and prices will be mailed upon request. Estimates for the application of their material furnished at any time.

Heating and Ventilating Plants.

The Machinery and Electrical Company of Los Angeles, prominent throughout the State of California as heating and ventilating engineers, has designed and installed systems in nearly all the large school houses, planned by Architect F. S. Allen. Two of these buildings are illustrated in this number of The Architect and Engineer. They are the San Pedro High School and the Russ High School at San Diego, and the Claremont Grammar School building at Claremont, Cal. The Sturtevant system of heating and ventilating is used in each of these buildings, and the system is regulated either by the National Regulator Company's Thermostatic system or the Machinery and Electrical Company's improved system of hand regulation.

Finished With Satinette.

The barber shop in the New Palace hotel is finished with Satinette, the white enamel manufactured by Pinchin Johnson & Company of London, England, for which W. P. Fuller & Company are the Pacific coast agents. Those who have had the privilege of seeing this room unite in saying that it strikes the note of perfect taste and makes a most artistic, durable and sanitary covering.

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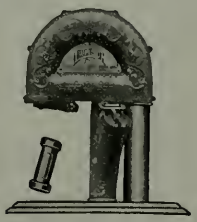

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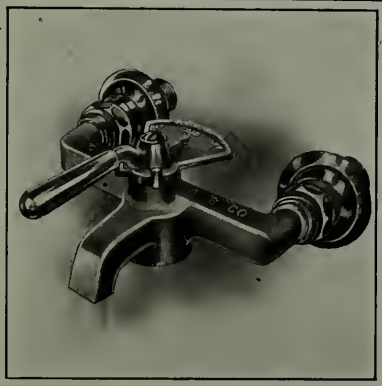

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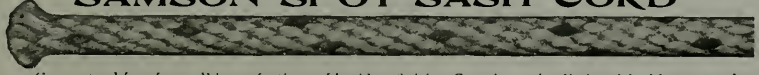

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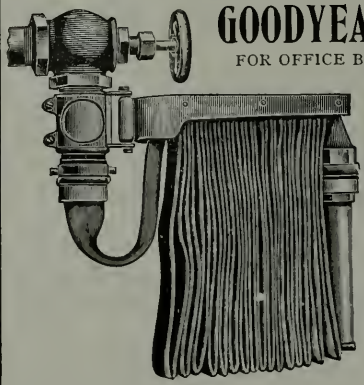

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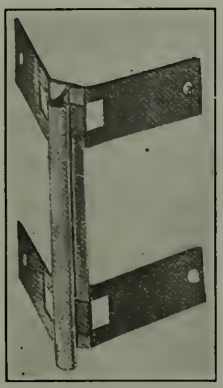

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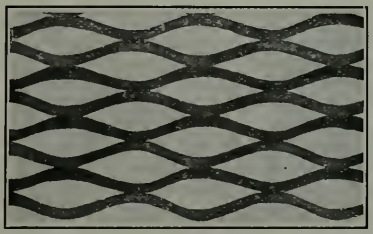

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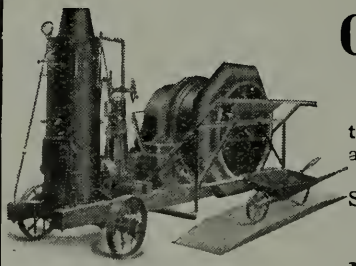

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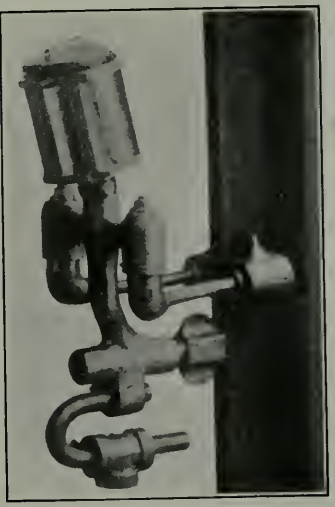

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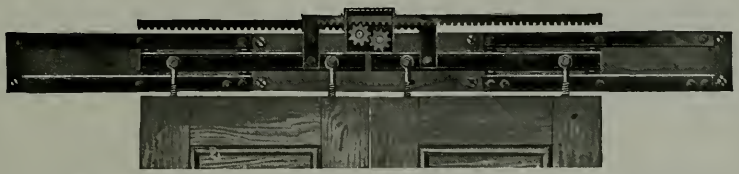

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Did you answer all these questions?

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Were not these candidates advertised a thousand times better than you ever were?

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Show them that you have faith in your goods.

Get down off your high pedestal and touch elbows with the men you want to reach.

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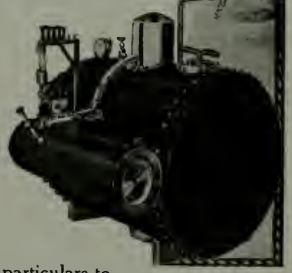

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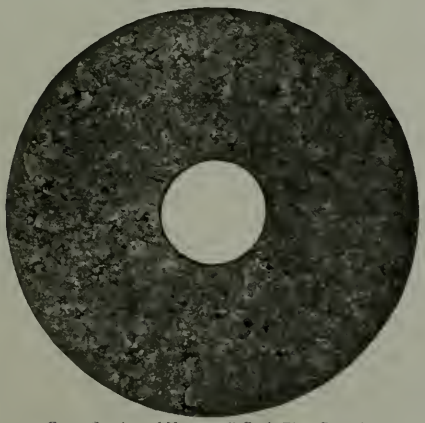
FOR BRINE, AMMONIA, ICE WATER AND COLD WATER LINES.



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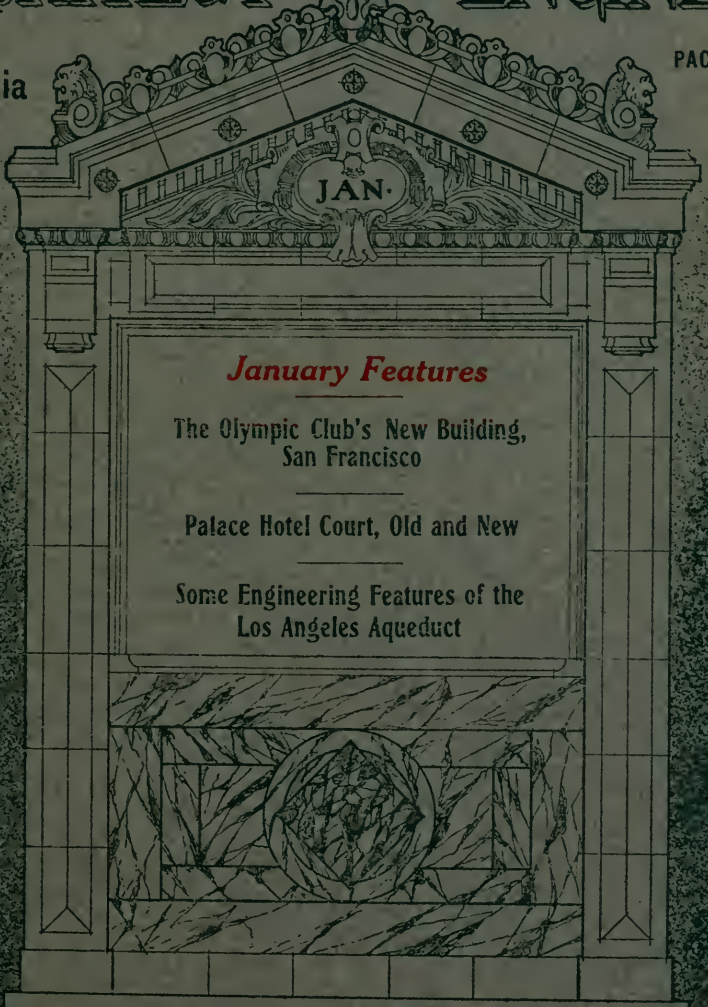

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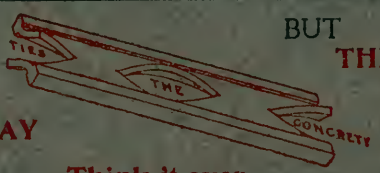

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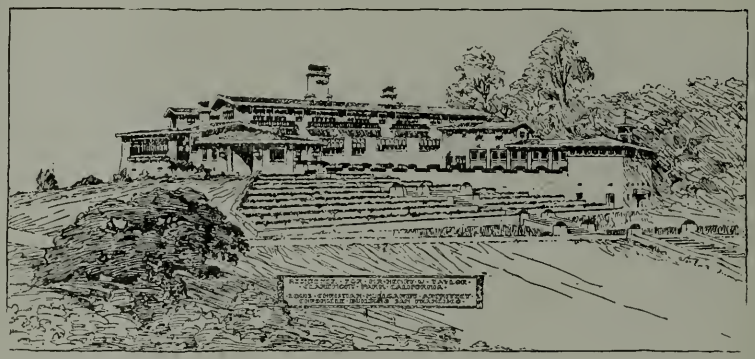

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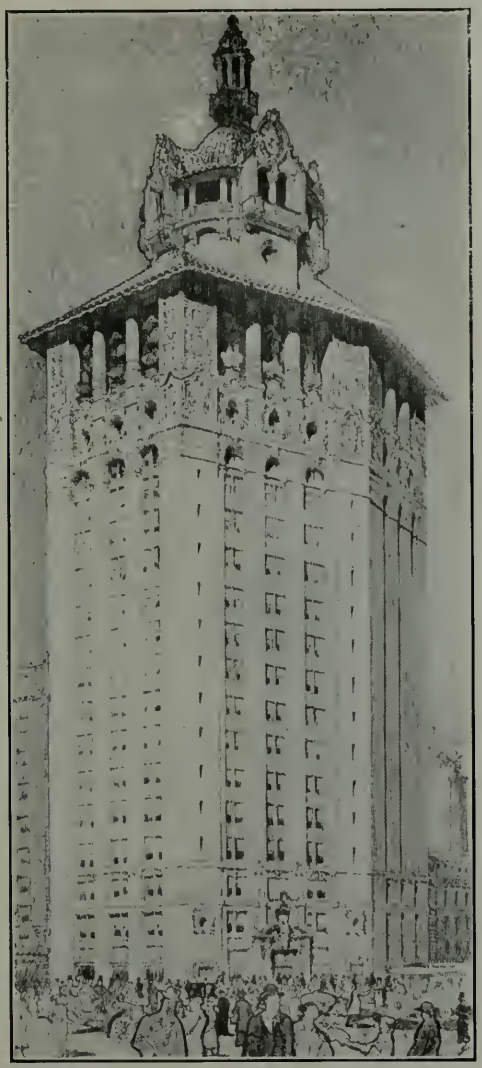

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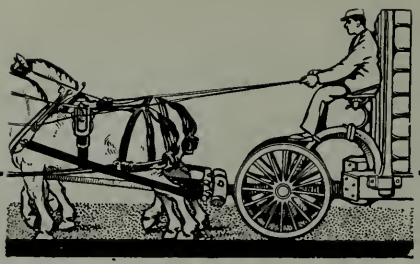

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Flooring

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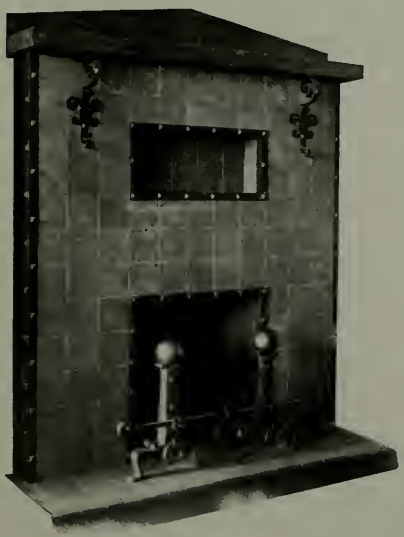

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(For Index to Advertisements, see page 117)

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[See distributing agents on page 139]

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR FINISH
Medusa White Portland Cement, California Agents, The Building Material Co., Inc.....587 Monadnock Bldg., S. F.
"La Fuge" sold by Waterhouse & Price, 59 Third St., S. F.
"Vitrolite" Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 139]

CEMENT FLOOR COATING
Adamant Cement Floor Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branch....Central Bldg., Los Angeles
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 139]

CEMENT TESTS
Robert W. Hunt & Co., 425 Washington St., S. F.
Pacific Laboratories, Inc., 558 Market St., S. F.
Smith, Emery & Co., 165 Howard St., S. F.

CHEMICAL ENGINEERS
Robert W. Hunt & Co., 425 Washington St., S. F.
Pacific Laboratories, Inc., 558 Market St., S. F.
Smith, Emery & Co., 165 Howard St., S. F.

CHEMICAL ENGINES
Kanawha Chemical Engine Co., Charlstown, W. Va.

CHIMNEY BUILDERS
Dunlevy & Gettle....79 City Hall Ave., S. F.
Dresser, McDonnell & Co., 39-49 Isis St., S. F.

CHURCH FURNITURE
Spencer Desk Co....Monadnock Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

CLOCKS—SELF-WINDING
Ferdinand Fish, 250 Montgomery St., S. F.

COLD STORAGE INSULATION
Union Fibre Co., manufacturers of Waterproof Lith, Union Corkboard, Linofelt, Coast Agency, 710 Pacific Bldg, S. F.

CONCRETE CONSTRUCTION
Bluxome & Co.....5 Front St., S. F.
Foster & Vogt, Builders Exchange, 180 Jessie St., S. F.
A. Lynch & Co., 314 Builders' Exchange Bldg., S. F.

CONCRETE MIXERS
Beall & Co., Portland, Or., Agents Chicago Concrete Mixer
Coltrin Concrete Mixers, N. J. Morehouse, Western Agent, Waterloo, Iowa; J. L. Mery Eng. Co., Monadnock Bldg., S. F.; V. W. Mason, St. Johns, Oregon.
F. T. Crowe & Co., Seattle, Tacoma, Spokane and Portland
Chicago Improved Cube Mixer, Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co., Portland and Seattle.

CONCRETE PIPE
Reinforced Concrete Pipe Company, 716 Central Bldg., L. A. Monadnock Bldg., S. F.

CONCRETE REINFORCEMENT
Clinton Fireproofing System, L. A. Norris, Monadnock Bldg., S. F.
Corrugated Bars sold by John B. Leonard, C. E. Sheldon Bldg., S. F.
Lilley & Thurston Co....82 Second St., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Arthur Priddle.....133 Geary St., S. F.
Kahn System.....S. F., L. A. and Portland
Twisted Bars sold by Woods & Huddart....356 Market St., S. F.
Northwest Bridge Works.....Portland, Ore.

CONCRETE SURFACING
"Concreta" sold by W. P. Fuller & Co., S. F.
"Glidden Liquid Cement," sold by Glidden Varnish Company, Cleveland, O.
"Alkacene" Liquid Concrete—Boyd & Moore, 356 Market St., S. F.

CONTRACTORS, GENERAL
Taylor & Johnson, Postal Telegraph Bldg., S. F.
Standard Construction Co., Hooker & Lent Bldg., S. F.
Reardon-Crist Co..1166 Webster St., Oakland
W. H. Bagge & Son, Inc., 3528 Sacramento St., S. F.
Esterley Construction Co.....Berkeley, Cal.
C. A. Brady Builders' Exchange, S. F. and Menlo Park
Lange & Bergstrom, Monadnock Bldg., S. F.
Metropolis Construction Co., 34 California St., S. F.
F. O. Engstrum Co., Los Angeles and San Jose, Cal.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
P. Peterson.....Fruitvale, Cal.
Louis J. Larson....1231 Chestnut St., Oakland
Ransome Concrete Co....Crocker Bldg., S. F.
Northwest Bridge Works, Fifteenth and Front Sts., Portland
Redmond, De Luca & Barzellotti, 268 Montgomery St., S. F.
Gutleben Bros..944 Monadnock Bldg., S. F.
E. D. Crowley Co., 127 Montgomery St., S. F.
Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.
Wm. A. Butler & Co....660 Market St., S. F.

CORKBOARD INSULATION
Armstrong Cork Co....693 Mission St., S. F.

CORNER BEAD
Boyd & Moore.....356 Market St., S F.
Parker Corner Metal Bead sold by J. W. Richards.....Metropolis Bank Bldg., S. F.
"Prescott" sold by Boyd & Moore, 356 Market St., S. F.

DAMP-PROOFING COMPOUND
Boyd & Moore.....356 Market St., S. F.
"Pabco" Damp Proofing Compound sold by Paraffine Paint Co.....38 First St., S. F.
H. D. Samuel Company, 23 Valencia St., S. F.
"Protectorine," Compound, sold by Boyd & Moore .....356 Market St., S. F.

DAMP PROOF PAINT
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

DISAPPEARING BEDS
Holmes Disappearing Bed Company, 687 Monadnock Bldg., S. F.

DOOR OPENER
G. Rischmuller.....Builders' Ex., S. F. and 842 37th St., S. F.

DOOR HANGERS
Pitcher Door Hanger sold by Pacific Tank Co.....318 Market St., S. F.
Reliance Hangers.....(see page 147)

H. T. Johnson Chas. L. Taylor

Phone Kearny 4039

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NEW YORK CLEVELAND ST. LOUIS

VERMONT MARBLE CO.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

DOORS—METAL
Waterhouse & Price.....59 Third St., S. F.
"Cross" Fireproof Horizontal Folding Doors,
Boyd & Moore.....356 Market St., S. F.

DOORS—REVOLVING
"Van Kannel" Revolving Doors,
Boyd & Moore.....356 Market St., S. F.

DOORS—VENEER
Northwest Door Co., Albina Ave., Portland

DRILLS, BRICK AND STONE
Star Expansion Bolt Co.,
1010 Howard St., S. F.

DUMB WAITERS
Wells & Spencer Machine Co.,
139-141 Beale St., S. F.
Boyd & Moore.....356 Market St., S. F.

ELECTRICAL CONTRACTORS
Camino Electric Co.1715 Greenwich St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Hanbridge-Loyst Electric Co.,
77 Sutter St., S. F.
Butte Engineering Co..683 Howard St., S. F.
A. C. Thode.....251 Stevenson St., S. F.
Latchem Engineering & Electric Co.,
214 Ellis St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.

ELEVATORS
Van Emon Elevator Co.,
54 Natoma St., S. F.
Wells & Spencer Machine Co.,
139 Beale St., S. F.

ELEVATOR CARS
Cleveland Art Metal Co.,
Boyd & Moore, Agents, 356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co.,
593 Market St., S. F.

ENGINEERS
Thos. Morrin.....Balboa Bldg., S. F.
John B. Leonard.....Sheldon Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.
F. J. Amweg, C. E., 700 Marston Bldg., S. F.
Chas. M. Charruau, Contracting Engineer,
Humboldt Bank Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co.,
593 Market St., S. F.

FILTERS
The Self-Cleaning Filter Co.,
527 California St., S. F.

FIRE ESCAPES
Standard Iron Works.....Portland, Ore.

FIRE EXTINGUISHERS
Goodyear Rubber Company,
587-591 Market St.,S. F.

FIREPROOF PARTITIONS
Dodds' Interlocking Block Co.,
24 California St., S. F.

FIREPROOFING
Roebling Const'n Co..Crocker Bldg., S. F.
San Francisco Fireproofing Company, Collins' system..Metropolis Bank Bldg., S. F.

FIREPROOF FLOORING
Carrelin Asbestos Co.....Sunnyvale, Cal.

FIREPROOF SHUTTERS AND DOORS
McCormick-Henderson Co.,
Postal Telegraph Bldg., S. F.

FIRE PROTECTION
Goodyear Rubber Company,
587-589 Market St., S. F.

FIRE PROTECTION—SPRINKLER SYSTEM
Jno. G. Sutton Co.....229 Minna St., S. F.
Pacific Fire Extinguisher Co.,
507 Montgomery St., S. F.

FLOOR FINISH
Standard Varnish Works,
Chicago, New York and San Francisco

FLOORING—ENGLISH BLOCK FLOOR
Jas. G. Wilson Mfg. Co.,
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McCormick-Henderson Co.,
Postal Telegraph Bldg., S. F.

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Slauson ave. and Los Angeles
Carrelin Asbestos Flooring Co.,
Sunnyvale, Cal.

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California Art Glass Works
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United Glass Co.....115 Turk St., S. F.
W. H. Judson Art Glass Co.
720 S. Broadway, Los Angeles, Cal.
Munich Art Glass Company, Inc.,
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND AND CRUSHED ROCK.
Chas. P. Nott..379 Alma St., Palo Alto, Cal.
California Bldg. Material Co.,
Pacific Bldg., S. F.
Leona Chemical Co..1256 Broadway, Oakland
Grant Gravel Co.....87 Third St., S. F.

HARDWOOD AND INLAID FLOORS
Inlaid Floor Co.....398 Eddy St., S. F.
Boyd & Moore.....356 Market St., S. F.

HARDWOOD FLOORS
Cooper's Floor Co.,
2139 Center St., Berkeley, Cal.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
E. A. Howard Co.....20 Howard St., S. F.
Strable Mfg. Co.
First St., bet. Washington & Clay, Oakland
White Brothers,
Cor. Spear and Howard Sts., S. F.

HARD WALL PLASTER
Regan hard wall plaster,
Mound House, Nev.
Standard Supply Company,
First St. and Broadway, Oakland
Reno Hard Wall Plaster, sold by Western Building Material Co.,
340 Steuart St., S. F.
Adamant Co.....Worcester Bldg., Portland
Empire Hard Wall Plaster Co.,
Pacific Bldg., S. F.

HEATERS—AUTOMATIC
Ruud Manf'g Co., 428 Sutter St., S. F.; 651 S. Hill St., L. A.; 294 Yamhill St., Portland, Ore.
Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater sold by
Thos. Thieben & Co....585 Mission St., S. F.
John Wood Mfg. Co.,
741 Cypress St., Oakland

HEATING AND VENTILATING
Hart Heater Co.,
State Savings Bank Bldg., Oakland
Robert Dalziel Jr. Co., 418 13th St., Oakland
California Hydraulic Eng. & Supply Co.,
523 Market St., S. F.
The Lindley Oil Burner, represented by Long & Long.....724 San Pablo Ave., Oakland
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351-353 N. Main St., Los Angeles
Silva Heating & Plumbing Co.,
140 First St., S. F.
Solar Heater Co.,
333 New High St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.

HINGES
Stanley's Ball-Bearing Hinges,Stanley Co.,
New Britain, Conn.

IMITATION HARDWOOD
National Lynwood Company,
310 California St., S. F.

IMITATION STONE
C. Menzer & Son.....862 Howard St., S. F.

INSPECTIONS AND TESTS
Robert W. Hunt & Co.,
425 Washington St., S. F.
Pacific Laboratories, Inc.,
558 Market St., S. F.
Smith, Emery & Co., Inc.,
165 Howard St., S. F.

INSURANCE
Pacific Surety Co..326 Montgomery St., S. F.
Voss, Conrad & Co..Modnadnock Bldg., S. F.

INTERIOR DECORATING
L. Tozer & Son Co., 228 Grant Ave., S. F.
C. E. Gordon.....1235 Pierce St., S. F.
Schastey & Vollmer..1930 Van Ness Ave., S. F.
W. W. Tucker,
Fourteenth and Webster Sts., Oakland
Pfister & Co.....169 Grove St., S. F.

INSULATION
Union Fibre Co., Winona, Minn.; Coast Agency.....710 Pacific Building, S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.

LAUNDRY TRAYS
Eastern Reinforced Tray Co.,
Eighteenth and Clementina Sts., S. F.
Peerless Mfg Co....364 Eleventh St., S. F.

LIME
Standard Supply Co., Oakland
First St. and Broadway, Oakland

LIGHTING FIXTURES
Geo. R. Greenleaf, 2107 Addison St., Berkeley
The Enos Company..1748 California St., S. F.
Adams & Hollopeter....745 Mission St., S. F.
Morrison Electric Co.,
291 Morrison St., Portland

LOCKERS—METAL
Boyd & Moore.....356 Market St., S. F.

LUMBER
Santa Fe Lumber Co.
Seventeenth and De Haro Sts., S. F.

MACHINERY AND MACHINERY SUPPLIES
California Hydraulic Eng. & Supply Co.,
523 Market St., S. F.
Machinery and Electrical Co.,
351 N. Main St., Los Angeles
Steiger & Kerr Stove & Foundry Co.,
Folsom and 18th Sts., S. F.

MAGNESITE
California Magnesite Co.,
Slauson Ave., Los Angeles

MAILING CASES
Mailing Case Mfg. Co., 264 Natoma St., S. F.

MANTELS
Mangrum & Otter.....561 Mission St., S. F.
W. W. Montague & Co., 557 Market St., S. F.

MARBLE
Joseph Musto Sons—Keenan Co.,
535-565 North Point St., S. F.
Italian & American Marble Works,
Sixteenth and Carolina Sts., S. F.
Western Magnesite Development Co.,
Metropolis Bank Bldg., S. F.
Columbia Marble Co., 268 Market St., S. F.
Vermont Marble Works, Brannan St., S. F.
587-591 Market St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

MASONS.
T. F. O'Rourk.....180 Jessie St., S. F.
Ferdinand Wagner.....607 Waller St., S. F.

MATTING RUBBER AND TILING RUBBER
Goodyear Rubber Company,

MECHANICAL ENGINEER
Thomas Morrin.....Balboa Bldg., S. F.

METAL CEILINGS
San Francisco Metal Stamping & Corrugating Co....Treat Ave. and 19th St., S. F.
Western Art Metal and Iron Co.,
405 Sixth St., S. F.

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Lilley & Thurston Co..82 Second St., S. F.

METAL DOORS AND WINDOWS
Waterhouse & Price.....59 Third St., S. F.

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Meurer Bros., represented by J. A. McDonald....Builders' Exchange Bldg., S. F.
San Francisco Metal Stamping & Corrugating Co....Treat Ave. and 19th St., S. F.

MILL WORK
Enterprise Mfg. Co.....Stockton, Cal.

OFFICE BUILDING DIRECTORIES
McCormick & Henderson,
Postal Telegraph Bldg., S. F.

OIL BURNERS
S. T. Johnson Co., 1334 Mission St., S. F.
The Lindley Oil Burner, represented by Long & Long.....724 San Pablo Ave., Oakland
C. F. Weber & Co., 365 Market St., S. F.

OPERA CHAIRS
Spencer Desk Co....Monadnock Bldg., S. F.

ORNAMENTAL CEMENT WORK, CAPITALS AND BRACKETS
D. Ross Clarke....Builders' Exchange, S. F.
Western Builders' Supply Co.,
680 Mission St., S. F.

ORIENTAL GOODS
Sing Fat Co.,
Dupont and California Sts., S. F.

ORNAMENTAL IRON AND BRONZE
Golden Gate Structural & Ornamental Iron Works.....1435 Mission St., S. F.
Vulcan Iron Works....604 Mission St., S. F.
Chr. Deterding.....67 Clementina St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati
J. G. Braun.....Chicago and New York
Sartorius Co., Inc..16th and Utah Sts., S. F.

PAINT FOR CEMENT
Vitrolite Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
BAY STATE BRICK AND CEMENT COATING—Made by Wadsworth, Howland & Co. (Inc.). See adv. in this issue for Pacific Coast agents.
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branch,
Central Building, Los Angeles

PAINTS, OILS, VARNISHES, ETC.
Paraffine Paint Co.....38-40 First St., S. F.
Glidden Varnish Co.....Cleveland, Ohio
Standard Varnish Works, represented by W. P. Fuller & Co..S. F. and Los Angeles

PAVING
Warren Construction Co.,
217 Beck Bldg., Portland, Ore.

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R. J. Waters Co.....717 Market St., S. F.
Pacific Photo & Art Co.,
Monadnock Bldg., S. F.
Gabriel Moulin.....153 Kearny St., S. F.

PLASTERERS
C. A. Marks.....42 21st St., Portland, Or.
D. Ross Clarke.....708 Pacific Bldg., S. F.

PLUMBING
J. E. O'Mara.....447 Minna St., S. F.
Valente & Leveroni..1609 Powell St., S. F.
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Robert Dalziel Jr. Co. 418 13th St., Oakland
Jno. G. Sutton Co.....229 Minna St., S. F.

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Crane Company.First and Howard Sts., S. F.
Geo. H. Tay Co.....617 Mission St., S. F.
Haines, Jones & Cadbury Co.,
846 Bryant St., S. F.

PUMPS, MACHINERY, ETC.
Simonds Machinery Co., 12 Natoma St., S. F.
California Hydraulic Eng. & Supply Co.,
523 Market St., S. F.

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Southern Pacific Co.....Flood Bldg., S. F.
Corvallis & Eastern Ry.....Portland, Ore.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 365 Market St., S. F.
Lilley & Thurston Co....82 Second St., S. F.
McCormick-Henderson Co.,
Postal Telegraph Bldg., S. F.

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Pioneer Roll Paper Co.....Los Angeles
Mackenzie Roof Co.,
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The Watson Roof Co..932 Folsom St., S. F.
Western Builders' Supply Co.,
680 Mission St., S. F.
H. D. Samuel Company, 23 Valencia St., S. F.
Metropolis Bank Bldg., S. F.
W. H. Wilson & Co., 42 Natoma St., S. F.
Olympic Roofing Co., Red Diamond Brand.
420 Sweetland Bldg., Portland
Ford & Malott,
Mariposa and Iowa Sts., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

RUBBER TILING
Goodyear Rubber Co., 587 Market St., S. F.
61 Fourth St., Portland

SANITARY SPECIALTIES
D. H. Gulick.....Lick Bldg., S. F.

SASH CORD
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines.....88 Broad St., Boston, Mass.

SCHOOL FURNITURE AND SUPPLIES
Spencer Desk Co....Monadnock Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.
210 N. Main St., Los Angeles

SHEATHING AND SOUND DEADENING
"Linofelt" sold by Western Asbestos Magnesia Co.....Balboa Building, S. F.

SHEET METAL WORK
Yager Sheet Metal Work,
1006 Seventh St., Oakland

SHINGLE STAINS
Waterproof and Odorless Art in Shingle Stains.—Made by Parker, Preston & Co., Inc. Pacific Coast Branch,
Central Building, Los Angeles

SLATERS' CEMENT
Western Builders' Supply Co., Representing Clinton Metallic Paint Co., Clinton, N. Y.

SPANISH TILE
Meurer Bros.....Builders' Exchange, S. F.
San Francisco Metal Stamping Co.,
Treat Ave. and 19th St., S. F.

STABLE STALLS AND FIXTURES
Howe Scale Co.....143 Main St., S. F.

STAMPED SHEET METAL ORNAMENTS
San Francisco Metal Stamping & Corrugating Co....Treat Ave. and 19th St., S. F.

STANDARD SCALES
George A. Riggs, rep. The Howe Scale Co.....143-149 Main St., S. F.

STEEL BARS FOR CONCRETE REINFORCEMENT
Jno. B. Leonard.....Sheldon Bldg., S. F.
Woods & Huddart....356 Market St., S. F.

STEEL ERECTING
C. A. Blume .....185 Stevenson St., S. F.
G. J. Anderson.....503 Grove St., S. F.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and
322 S. Paulina St., Chicago

STEEL STUDDING AND LATH
Lilley & Thurston.....82 Second St., S. F.

STREET PAVING
Denny-Renton Clay and Coal Co.,
Lowman Building, Seattle
Los Angeles Pressed Brick Co.,
Frost Building, Los Angeles
Warren Construction Co.,
217 Beck Bldg., Portland, Ore.

STEEL AND IRON—STRUCTURAL
Boyd & Moore.....356 Market St., S. F.
Pennsylvania Steel Co., Chronicle Bldg., S. F.

STEEL AND IRON—STRUCTURAL
City Iron Works....303 Front St., Portland
Woods & Huddart.....356 Market St., S. F.
Northwest Bridge Works.....Portland, Ore.
Pacific Rolling Mills,
17th and Mississippi Sts., S. F.
Western Iron Works.....125 Beale St., S. F.
Tayler & Spotswood Co.,
Minnesota and 19th Sts., S. F.
Brode Iron Works....621 Howard St., S. F.
Vulcan Iron Works....604 Mission St., S. F.
Golden Gate Structural & Ornamental Iron Works ....1435 Mission St., S. F.
Mortensen Construction Co.,
19th and Indiana Sts., S. F.

STORE SERVICE EQUIPMENT
Lamson Consolidated Store Service Co.,
1403 Call Bldg., S. F.

TANKS
Pacific Tank Company..318 Market St., S. F

THEATER CURTAINS
Elevator Supply & Repair Co.,
593 Market St., S. F.

TILE, MOSAIC, MANTELS, ETC.
Hartford Faience Company, represented by C. F. Pratt.....660 Market St., S. F.
Mangrum & Otter....561 Mission St., S. F.
Oregon Art Tile Co., 311 Stark St., Portland
W. W. Montague, 557-563 Market St., S. F.

VACUUM CLEANERS
Mechanical Dust Suction Company,
301 Merchants' Exchange, S. F.
S. F. Compressed Air Cleaning Co.,
Sutter and Stockton Sts., S. F.
Vacuum Engineering Company,
772 Monadnock, Bldg., S. F

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co.....317 Howard St., S. F.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., S. F.
McCormick-Henderson Co.,
Postal Telegraph Bldg., S. F.
Williams & Carter.....197 Jessie St., S. F.

VENEERS
Dieckmann Hardwood Co.,
Welch Bldg., 244 California St., S. F.

WALL BEDS
Marshall & Stearns Co.,
1154 Phelan Bldg., S. F.

WATERPROOFING FOR CONCRETE, ETC.
The Building Material Co., Inc.,
587 Monadnock Bldg., S. F.
Aquabar Co.....Philadelphia, Pa.
Parrott & Co.....320 California St., S. F.
Hydrex Felt and Engineering Co.—Boyd & Moore, Agents.....356 Market St., S. F.

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"Satinette." W. P. Fuller & Co.
S. F. and all principal Coast cities

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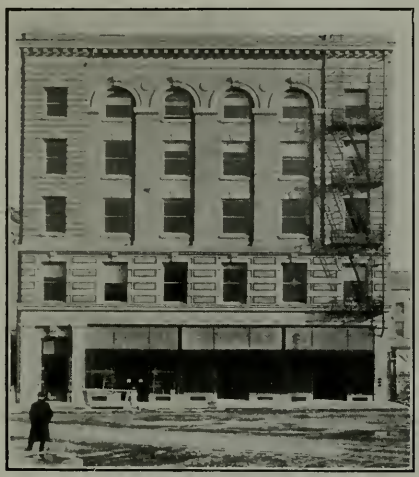

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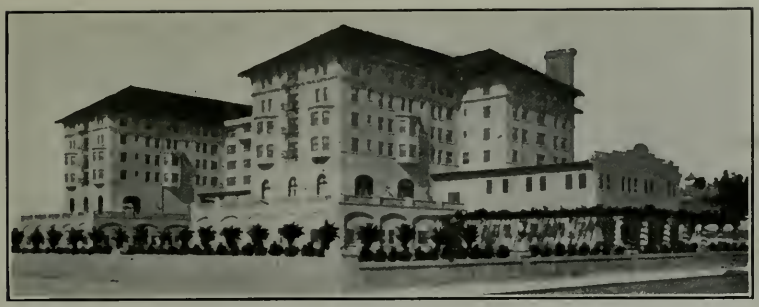

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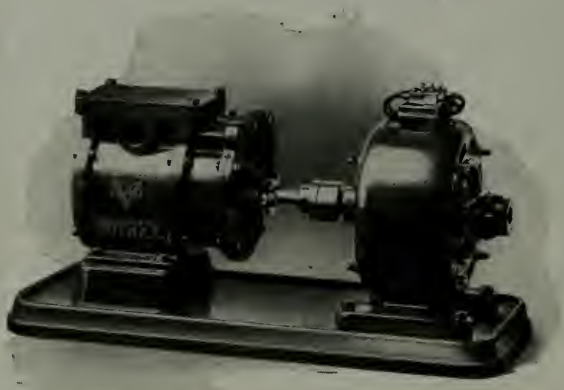

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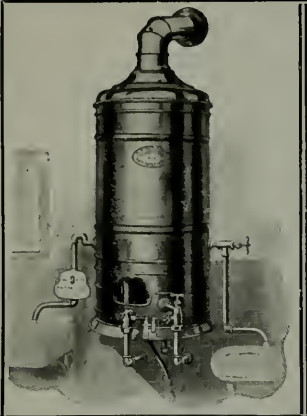

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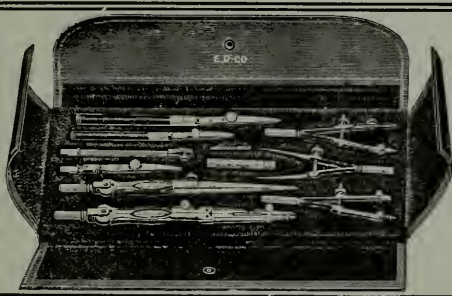

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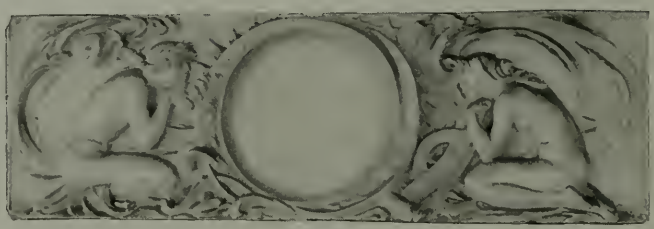

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Frontispiece.
The Architect and Engineer of California
January, 1910

OLYMPIC CLUB BUILDING, SAN FRANCISCO
Paff & Bauer, Architects

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THE

Architect and Engineer

Of California

Pacific Coast States

VOL. XIX. JANUARY, 1910. No. 3.

The New Home of the Olympic Club, San Francisco

NO ATHLETIC organization in the country will have any finer home than the Olympic Club of San Francisco, the plans for which have just been completed by Architects Paff & Bauer. The scheme for the building was selected by the club from a number of competitive plans. It calls for a pretentious granite and brick structure ten stories in height, but for the present, as shown in the illustration, but five stories will be built. The entrance has a main order based on the Roman Doric style. It is not a copy of any existing example, the Palazzo Massimi in Rome being the nearest prototype. Close above the first floor tapestry brick is used up to the attic belt course, the attic story being in white semi-glazed sand-blasted terra cotta with deep carved panels.

The building scheme offers some interesting problems from an engineering standpoint. All foundations will rest on compact sand, all floors and walls will be carried on steel columns, girders and beams, the steel being carefully fireproofed with concrete.

The building will have a frontage on Post street of 170 feet and a depth of 137½ feet, the entire lot being covered. One of the main features of the plan arrangement is the swimming tank, already constructed, and which will be raised to within a few feet of the sidewalk level, thus insuring good sewer connection and doing away with pumping machinery. The swimming tank occupies the east side of the lot, large skylights in colored leaded glass admitting plenty of sun and air. A direct entrance, highly ornamental, is provided to the swimming pool from the street. The main entrance to the club, having a large peristyle with double Doric columns, is in the center of the Post street front. At the main entrance doorway, flanked by heavy metal lamps, there is provided a generous vestibule through which one enters the large lobby finished in Grecian marbles and Caen stone.

On the first floor are the office, private office, director's room, hat and coat rooms, reading room and lounging rooms, with windows and balconies above the swimming pool. Two large hallways lead to the spacious gymnasium, 60x108 feet, in the rear of the lot. Large stairways and elevators connect the different stories and special attention is given to good communication between all the athletic departments, including hand-ball courts. On the second floor are located the main dining-room, private dining-rooms, card-rooms and billiard-room, as well as a very spacious kitchen.

The third, fourth and fifth floors are given over to the bed-rooms,

Magnificent Lobby, Olympic Club Building, San Francisco
Paff & Bauer, Architects

these being so arranged that as many suites of two rooms or single sleeping apartments may be had as the club members may select.

The entire mezzanine and basement floor is devoted to the salt water swimming pool, 35x100 feet, with lockers and dressing-rooms, fresh and salt water showers and bath-rooms adjacent, as well as caldarium and frigidariums, vast areas being required for all these features in a club of so large a membership, as that of the Olympic.

The main ceiling of the swimming pool is treated after the Roman Thermes of Diocletian and Caracalla.

* * *

What Every Journalist Knows

Nice Old Lady: "Will you kindly tell me if the lady who writes 'The Mother Page' every week in your paper is in? I want to tell her how much I have enjoyed reading her articles on 'The Evening Hour in the Nursery.'"

Office Boy: "That's him over there with the pink shirt, smokin' a pipe."

Floor Plan, Olympic Club Building
Paff & Bauer, Architects

Buildings of the Future

THE New York Herald of recent date contains an interesting article on the possibilities of electrical development and what we may reasonably expect of chemistry, medicine, flying machines and transportation facilities in the future. Nothing is suggested, however, in regard to the actual housing of people or industries or the probabilities in that direction. The subject suggests many improvements within reason and as the sky-scrapers and fireproof buildings of today are replacing structures considered adequate, if not perfect, ten years ago, so may the next generation frown upon the crudeness of our efforts today. Shall we fly from the twentieth story of one building to the fortieth of another without the bother of going down in one elevator and up another? Will our heating, cooking and lighting all be done by electricity—without the use of wires —perhaps? Is wireless or pipeless plumbing a possibility and to what extent will reinforced concrete, glass and asbestos revolutionize construction? Will the prediction of Mr. Edison come true that homes will be poured out by the hundreds or thousands and owners will buy patterns and not plans? Will not a certain degree of comfort be sacrificed when metal furniture, asbestos curtains, bedding and furnishings become a part of the fireproof regulations? Seriously, there will be many improvements in the manufacture of building materials and the facilities for putting them together to form the completed structure. The cry of tomorrow will be for more results in less time. It will be a dizzy nerve-racking existence from all indications.

Palace Hotel, San Francisco
Finished With Satinette White Enamel *Trowbridge & Livingston, Architects*

The Old Palace Hotel, From a Photograph Taken in 1875.

The Palace Hotel Court, Old and New

By HORATIO F. STOLL.

THE formal opening of the new $8,000,000 Palace Hotel marks the final step in the rehabilitation of San Francisco's "burned district." Such scenes of rejoicing, such kindly expressions of good will and good wishes have not been evoked by the reconstruction of any other building in San Francisco. This is not surprising, for none were more intimately associated with the social, commercial and political history of California's metropolis than the Palace Hotel.

While I realize there are many whose memories of the old caravansary cling more fondly to the weddings, cotillons, assemblies, and dances that occurred in the Maple and Marble rooms, and to the pleasant evenings spent with convivial friends in the grill, the court stands out most prominently in my mind. I can see the tiers of balconies, the handsome furniture in rich red upholstering, the great palm in the center, and other tropical plants in great profusion; the pendant globes of fire, the myriads of reflected lights, the organ and orchestra.

San Francisco was indebted to William C. Ralston for the Palace Hotel and the famous court. Without him, it is doubtful if any other citizen of the early seventies would have risked several million dollars on such a venture. But Ralston was the most public-spirited man of his day. He realized that San Francisco needed a hotel in keeping with its growing importance and so he set about to see that one was built. He was always ready to listen to any plan for the development of the city that looked plausible. And his purse was always open. He promoted and became interested in various manufacturing establishments, among others the Mission Woolen Mills, the Kimball Carriage Factory, the San Francisco Sugar Refinery. He contributed much to the building of the first dry dock at Hunter's Point. He furnished capital for the erection of the Grand Hotel and for the buying up of property for the opening of New Montgomery street. He built the famous old California Theater.

Everything he projected or planned was on a large scale. Ralston never did things half-way. And so when he decided to erect a suitable hotel, he sent East and secured the best engineer he could find in the United States. He told him to look at this city, its future, its possibilities. He assured him that money was no object, as long as he accomplished two things—first, to build a hotel that should be earthquake proof, and second, to make it surpass anything of which this country could then boast.

A site was purchased on Market Street for a million dollars; contracts were let for a structure that would cost $1,750,000; $500,000 was set aside for the furniture, which, by special contract, was made right here in San Francisco.

After months of waiting, the excavation for the foundation commenced, and soon the building began to take form. Commencing two stories underground, it rose seven full stories. In those days it was looked upon as an "architectural monster." Its floor space covered 96,250 square feet, or nearly two acres and a quarter. In its construction, 26,000,000 bricks were used, and to make it as earthquake proof as possible, broad iron bands were introduced in the walls. They were of such immense size as to require nearly three thousand tons for this purpose alone. Some of the other statistics, printed by the "Alta California" of those days, show that 16,000,000 square feet of marble, 12,000 square feet of slabs and tiling,

685,000 lights of plate glass from England, and 3,700 lights of French plate glass of double thickness, were also utilized.

There was scarcely a day, during the many months this hotel was in course of building, that William Ralston was not to be found overlooking the work. He was here, there, everywhere. He took special interest in the novel open court, 144 feet by 84 feet, which was his own idea, and in the immense reservoir of 630,000 gallons of water which he intended for protection in case of fire.

Ralston's untimely death, which came so unexpectedly, and was followed by a series of dark days in the financial world, was a great shock to the community. Fortunately, the Palace Hotel was so nearly finished that its completion was not materially interfered with by the depressing incidents that followed during the next few months.

October 2, 1875, will always be looked upon as a Red Letter Day in San Francisco's history. It marked the date of her complete financial rehabilitation and the opening of the Palace Hotel to the public for a preliminary inspection. A vast assemblage gathered in the court, including prominent merchants, brokers, and public men, such as had seldom before been seen in this city. About a quarter to eleven, a serenade was given by an unusually large orchestra. Later William Sharon, who succeeded Ralston in most of his undertakings, was called upon for a few words. In the course of his remarks he said:

"In this temple of hospitality, amid all this flood of light and music, I experience a sense of almost overpowering sadness. I miss, as you do, the proud and manly spirit of him who devised this magnificent structure, and under whose direction and tireless energy it has been reared. I mourn, as you do, that he is not with us to enjoy this scene of beauty, and I offer here, with you, the incense of respect and affection to his memory. Peace be to his ashes. Whatever has been or may hereafter be said of his career, one thing is certain, his best efforts were exerted for the development of the city and state, and are the pride of his fellow citizens."

So impressive and sincere was Sharon's tribute to his departed friend, and so touched were the multitude, that it is said there were tears in many eyes, for it seemed such an irony of fate that Ralston should have worked so hard financing and attending to the endless worries connected with the erection of a large building, and then, when it was nearly completed, death should have robbed him of the fruits of his achievement.

On the evening of October 14th, the large dining-room was used for the first time. The occasion was a banquet in honor of General Phil Sheridan. In view of the remarkable progress we have made in all lines since 1875, the following account of the event from one of the papers is full of interest:

> The banquet was in every respect an elegant affair. The floral decorations surpassed anything that has ever been seen in San Francisco. The silver service, specially designed for the Palace Hotel, is rich and beautiful. Twelve handsome chandeliers provide the lighting. Each contains 25 globes, or 300 gas jets in all.
>
> The open court, with its innumerable gas jets reaching up to dazzling heights, was a beautiful sight. Hundreds of people filled the court, anxious to get a glimpse of the gorgeous dining-room and the guest of honor. The corridors leading to the reception room were also filled, and police were stationed all along to keep a passageway open for the guests.
>
> At eight o'clock General Sheridan made his appearance, being, as were all (excepting a few United States army officers), in evening dress. There were 216 persons at table, although the dining-room can easily accommodate twice that number. Seated at the table with General Sherman were Governor Pachecho, Senator Sharon, ex-Governor Low, General Schofield, Colonel M. V. Sheridan, Rev. John Hemphill and the Russian, German, English and Austrian consuls. Among the

Court of the Old Palace Hotel.

speakers during the evening was George T. Bromley, who was called upon to respond to a toast, "The Ladies." This he did in a more than usually happy strain and convulsed the people with laughter for several minutes. He was received at the close of his remarks with three cheers given with a will by all present.

The formal opening of the hotel did not take place until October 16th, when another great crowd assembled in the court to listen to a concert, given under the direction of the new manager, Warren Leland.

When General Sherman and Secretary of War Cameron and party visited San Francisco on September 21, 1876, the court was the scene of another popular demonstration. In the evening, after an elaborate banquet, General Sherman appeared upon the balcony of the first floor and immediately won the approval of the people by bowing graciously when the band struck up "Hail to the Chief" and beating time with his hand to

Court of the New Palace Hotel — *Trowbridge & Livingston, Architects*

the strains of "Marching Through Georgia" which followed. Sherman was a great admirer of San Francisco, having visited it ten times, and was anxious that every one should hear his voice. To the immense throng he commenced:

"I have an idea, from the form of the magnificent dome of this hotel, that I cannot make my voice heard. Can you hear me?"

And immediately there were cries of, "Yes, go ahead!"

Sherman's first words were a tribute to his old friend, Billy Ralston, with whom he had been on intimate terms for years.

"I remember well," he said, "when we used to take our blankets from different taverns and sleep out in the open air and pay $3 for the privilege, and now I come to this beautiful Palace Hotel, which I pronounce superior to the grand hotels of Paris and Vienna, which I have visited. All honor to the strong men of muscle and brain who have brought this city out of its chaos and made it what it is. All honor to Billy Ralston. No matter what he has done, I hope he has gone to heaven. He did much for your city and you can see the many memorials of his work around you."

General Sherman hit a responsive chord when he spoke so feelingly of Ralston and when he finished his remarks was cheered vociferously. He had to appear several times before the unwilling crowd dispersed and disappeared.

One of the most striking events that ever occurred in the court of the Palace Hotel was the public ovation given to General Ulysses S. Grant in September, 1879, when he returned from the Orient aboard the China after his two years' travel around the globe. San Francisco had expected to give him a grand reception and a great parade was arranged, but owing to his late arrival in port, much of the programme had to be omitted.

It was ten o'clock at night before the wide doors of the court of the Palace Hotel were thrown open and a barouche containing General Grant was driven within the building. He immediately dismounted and, crowding his way through the packed mass of people, was hurried to his room. As he alighted, Mme. Fabbri and a chorus of 560 voices stationed on one side of the balconies, sang an ode of welcome.

The crowd rushed after General Grant when he alighted, leaving the singers for a moment almost without an audience, but being stopped in their mad chase by a force of police, who blocked the way, they returned to the court, being assured by the announcement that the General would appear on one side of the balconies after he had time to take off his overcoat.

After a chorus, in response to repeated calls, he appeared on the balcony of the fifth floor and bowed to the shouting crowd, immediately retiring. Still the enthusiastic populace thronged the court and refused to leave. Finally Mayor Bryant appeared and announced that as soon as the General had finished dinner, he would show himself. In a short time Grant appeared again amid deafening shouts. Mayor Bryant raised his hand for silence and the General, mounting a chair which was passed over the heads of the surrounding crowd, was again greeted with a succession of cheers. When the noise subsided sufficiently, he delivered one of his characteristically brief speeches:

"Fellow citizens of San Francisco, after twenty years' absence, I am glad to meet you and assure you of my cordial thanks for the kind greeting you have given me. I shall stay in your city long enough to greet you more fully."

The General then withdrew amid tremendous cheering, and the crowd at length reluctantly scattered. But the people had plenty of chance to see the General again, for during the next ten days he appeared at a number of brilliant functions in his honor.

It was in the court of the Palace Hotel that San Francisco got its first glimpse of Adelina Patti, who was then in the height of her fame. For weeks and weeks the people of San Francisco had talked of nothing but the coming of Patti and the Mapleson Company. Public expectancy arose to fever heat. "It is hardly possible to describe in these more conventional days, the feeling of suppressed excitement that controlled the entire population," remarked an elderly friend, who recalled the occasion the other day. "The first evening of Patti's arrival brought out a large mob of curious people who filled the court and corridors of the Palace Hotel. At last the triumphant diva appeared and promenaded around the hall, waving her handkerchief to the crowds below and, of course, throwing kisses. Patti always threw lots of kisses. She looked then about twenty-four years of age, although she must have been twice that. Her figure was graceful and petite like a girl's, and she was perfectly gowned. Flashing jewels and soft lace enhanced her beauty. As she passed, we caught a whiff of subtle perfume like mignonette. It is strange how one remembers these unimportant details."

Every evening, when Patti sang, a curious crowd gathered in the court to catch a glimpse of her as she hastened into her carriage on her way to the opera.

It was in this selfsame court, on the evening of March 6, 1905, that Tetrazzini bade farewell to her host of friends and admirers, after a particularly successful season. The wonderful acoustic properties of this vast court were never better proven, for on this occasion, nothing of the exquisite quality of Tetrazzini's voice was lost. Its tiniest silver threads were heard in all their purity, and the crescendoes, which are like no one else's, were peculiarly effective.

I shall never forget the appearance of the court, with its tier upon tier of galleries filled with people in the gala attire of a festive occasion. It reminded one of the great opera houses of Europe. Tetrazzini stood at the edge of the second balcony, bowing and smiling with delight as the cheers and applause greeted her appearance. Her first number was "Caro Nome," the aria with which she captured San Francisco the first night she sang here. The applause that broke as the last note floated away was certainly like the "patter on shingles," because the handclapping came from everywhere, from the palm garden below to the top balcony near the skylight. That demonstration gave way to cheering. Tetrazzini was delighted and acted like a happy youngster, waving her handkerchief and throwing kisses. Upon a second recall, she repeated the aria and convinced every one that her singing was as near perfection as it is possible for a human being to attain. Her second number was Tosti's "Serenata," a graceful, haunting melody, which she was also coaxed into repeating.

That was nearly five years ago, and since then, what changes have occurred! The court, the scene of her triumphal farewell, has disappeared and been replaced by a new one, while the practically unknown Tetrazzini of those days is now the idol of London and New York!

The incidents that I have picked out would lead the reader to believe that the principal guests entertained by the hotel and welcomed by the public were confined to military heroes and fascinating prima donnas. On the contrary, distinguished visitors from every section of the globe

enjoyed the hospitality of this famous caravansary, and learned here for the first time how enthusiastic and warm-hearted a San Francisco multitude could be. Celebrities ranging from the once idolized John L. Sullivan to royalty, in the person of King Kalakaua, were greeted by an admiring and curious throng. I remember getting a view of President Roosevelt on his way to the "Golden banquet," given in his honor when he visited San Francisco. As usual, he was crossing the court at a strenuous pace with the members of his party following in his wake.

Another incident of the Palace Hotel court, which comes to my mind, relates to the happy Christmastide. Away back in 1894, Rev. Wm. Kipp, Jr., who founded the Mission of the Good Samaritan, introduced the innovation of having the boys and young men of the vested choir of the Mission visit the principal hotels of the city and give the guests, who were separated from their own kith and kin, an opportunity to feel the Christmas spirit and enjoy the delightful English carols, telling the story of the Christmas-tide.

It was my good fortune, one Christmas eve, to be in the court before it had been converted into a lounging room, and when carriages still drove through the porte cochere and deposited guests in front of the office. While we were chatting, the doors suddenly swung open and the merry voices of happy youngsters came on ahead of them. In a sort of orderly confusion, they tumbled out of the carryalls, and in a few minutes the mischievous faces were straightened, and the singers grouped around the gayly lighted Christmas tree might have posed for the angel-faced choristers which artists have delighted in picturing. They sang first the Christmas hymn of the world, "O, Come All Ye Faithful," and ended with "Sweet Christmas Carols." When the programme was half over, three or four little fellows, using stiff hats they borrowed from the bassos, went among the crowd for gratuitous offerings and many a gold piece, deposited by the much-impressed guests, glistened in the nest of silver in each of these improvised collection boxes.

Since the fire, the Mission of the Good Samaritan has possessed no choir, and this pretty custom has been abandoned. Cannot some other choir take up this good work and bring gladness to the hearts of strangers in our midst? It seems to me, now that so many of our down-town hotels have been rehabilitated, that this custom is well worth reviving.

The new court will prove a great surprise to San Franciscans. It is admirably suited for picturesque spectacles such as I have described, but there is a decided difference in its appearance. The most imposing feature of the new court, which occupies exactly the same location and ground as before, is the colonnade of massive Italian columns that support the balcony above. They are at least forty feet high and about three feet in diameter. The lighting effects are also novel; a soft golden sheen comes through the leaded glass arched dome, which is about three stories high, the ornamental iron work supporting it being painted bronze. Suspended from the dome are eight huge crystal chandeliers, which add brilliancy to the elaborate electric lighting at night. At either end of the balcony are three arched loges that will permit a hundred visitors to look down on the animated scene below. The color scheme of the rugs and upholstered furniture is again red, which gives a cheery, cozy atmosphere to the immense court. There is also a liberal sprinkling of palms and other tropical foliage. The floor is composed of mosaic tiles.

The arrangement of the rooms adjoining the court is somewhat different. Carriages and automobiles deposit the guests at the New Mont-

gomery street entrance, where is located the office. Here guests register and then pass through a tiny hall into the court. There will be absolutely nothing served in the court. The men's grill takes the place of the old dining-room and is considerably larger. On the opposite side, where the office and lobby of the old hotel stood, is a huge restaurant for women running the entire length of the court. Beyond is located the concert hall and the Ivory ballroom. Along the west side of the building is the kitchen, a wonderful establishment, colossal in size and furnished with every modern convenience necessary for making the cuisine of the New Palace Hotel equal to that of any hotel in the United States. An idea of the vast scale on which it is planned may be gathered from the fact that one range alone is 48 feet long.

But the change which impresses itself most on San Franciscans is the exterior appearance of the new building. It is going to take some time for the public to become accustomed to the rich yet severely plain straight walls after having for years associated the Palace Hotel with the old-fashioned bow windows. The buff pressed brick walls, however, are certainly more cheerful than the old steel-gray color scheme. A welcome addition, also, is the ornamental iron balconies and the porch which extends around the entire building at the ninth floor. It will serve as an excellent promenade for guests desirous of obtaining a good view of the rehabilitated down-town district which, less than four years ago, was nothing but a desolate stretch of ashes and tottering ruins.

*
* *

The World's Record in Masonry

MORE MASONRY was placed in the Ashokan dam at Brown station, near Kingston, N. Y., during the last month than has been laid in the same length of time in any other similar structure in the world. Not only was the record surpassed, but the mark was placed so far beyond any other achievement that it is likely to stand for some time unless it should be eclipsed at the Ashokan dam itself in the near future.

The figures for the monthly estimate of the contractors, show that 35,259 cubic yards were placed, adding to the dam a mass of masonry about 800 feet long, 120 feet wide, and 10 feet high. The nearest approach to these figures in any similar case is the record made a year ago at the Croton Falls dam, when about 26,000 cubic yards of masonry were put in place in one month. In the irrigation work of the Reclamation Service in the West, the highest monthly progress was 18,000 cubic yards on the Roosevelt dam.

The enormous amount of work done at the Ashokan dam in so short a time is considered by those in charge of the work as indicative of the adequacy of the plant and equipment. The masonry in the dam was begun the last of September, 1908, and up to the present time about 150,000 cubic yards have been laid. The completed structure will contain about 500,000 cubic yards.

*
* *

Edison Must Show Missouri

Although we've gently waiting been
More news to get,
That concrete house continues in
The abstract yet.

—Kansas City Journal.

Out of the West

By JOHN COTTER PELTON, Architect.

IT WAS some years ago that a visiting architect from the East remarked to me, in speaking of the work of the early San Francisco architects, that "nothing would be surprising coming from the West," and I was led to reply, "true, and we are not through yet." Several years later came the San Francisco disaster, which tore aside the veil and disclosed in the ruins of the Nevada Bank building the steel walls of which antedate by three years the first recorded suggestion in America of the modern method of steel building construction. This honor belongs, I am convinced, to Mr. David Farquharson, one of the first architects practicing in San Francisco.

In the development of concrete construction and its reinforcement with steel, little notice seems to be taken of the fact that the earliest examples of this type of construction on the Pacific Coast are to be found in the Stanford Museum at Palo Alto—and "lest we forget," let us bestow this honor where it is due, to Mr. G. W. Percy and Mr. Ernest Ransome, again of San Francisco, who together worked out this problem and put it into execution in a number of important works, and blazed the trail which is today a highway for we of lesser courage, and to face the skepticism and criticism which they endured took all there was in a man, and here it is proper to note that the museum building stood like a rock in the midst of a field of ruins—built by the skeptics—the Academy of Sciences building in San Francisco was in its destruction a greater task than in its building and took a longer time.

While in the environment of the Stanford campus, let us also note, although foreign to the subject, that the first photograph of a moving object was taken here—the racing horses of Governor Stanford, and the man who first peered into the future and saw a picture live and breathe and move was Mr. Maybridge, also out of the West.

I have in mind at this moment a subject which has interested me for years, upon which I have written before and have also had the pleasure of discussing some years since with the League of New York city, it is a study on well programmed and carefully mapped out lines of the indigenous architecture of America, with the hope that some day in the glimmering future we might have something more fitting to our environment—to our civilization, national life and every-day customs—than a French palace or an English cathedral.

I have read with pleasure the remarks of Mr. Cass Gilbert at Berkeley upon the occasion of his recent visit to us, of his emotions, seeming hope of such a realization and of the awakening of his own inspiration under the influence of the Far West, and in view of the coming exposition in San Francisco, is not this the grand opportunity, is this not the glorious necessity which beckoning us on, shall fill us with a noble ambition—with the "love and the power" that shall make her mother to a Young Era of architecture of the West.

I had the pleasure of attending on December 7th a meeting of the Los Angeles Chapter of the American Institute of Architects, at which were entertained the President of the Board of Education, the Superintendent of Schools and the Building Superintendent of the city. The purpose of this meeting was the exchange of ideas which might lead to the betterment of school building construction, in brief, an "educational convention." That this is good work all must see, and I would suggest that we of San

Francisco emulate the Los Angeles Chapter, and at once, by starting a similar campaign of education. I would bring together representatives of all the architectural societies of the coast, and prepare such a reasonable and conclusive argument, that there can be but one result, an enthusiasm and an appreciation of our work that we have never before realized and which I still believe to be always necessary for the greatest results.

* * *

Enamel Finish

By F. T. McHENRY.

THIS is truly an age of enamel. From the kitchen to the drawing-room, each in their way, have their uses for enamel.

Let us enter from the back door into the kitchen, the realm of the "domestic," where the effect of her scrubbing is everywhere in evidence. She cleans not wisely but too well; for this and other ills is the enamel tile back of the sink; for sanitary purposes the refrigerator and the sink alike are enamel.

Formerly, the kitchen walls were painted a dark color, so the dirt would not show; now white enamel is the proper thing, so the dirt will show, and can be washed with soap and water, making it look like new.

For the bed-rooms by far the most favored finish is a snow-white effect. It permanently beautifies, and from a standpoint of sanitation and health, it is ideal. Wherever high-class decoration is in progress, there is white enamel.

In the bath-room the walls, tubs and basins are white enamel, to look well, wear well and to be easily maintained in perfect cleanliness; and lastly the drawing-room. Every architect who wants his work decorated in the best style knows that nothing but a high-class white enamel can give the results he looks for, as it enhances and preserves the beauty of his creations, always in perfect taste and nothing equal to it for pure beauty and daintiness.

Nor is white enamel confined to the house, as the large hotels are painted with it. The steamship companies have adopted it for their ocean-going vessels. With yacht owners, too, by reason of its durability, it is a first favorite. Hospitals, on account of its not being affected by acids, fumes or anti-septics, as well as being sanitary, are large users of enamel.

* * *

Architectural Inaccuracies

RECENT comments on the death of Charles Follen McKim have brought out many false statements in regard to certain buildings designed by Mr. McKim and the firm of which he was so long a member. In speaking of this, Mr. Weeks, of Hiss & Weeks, architects, who was for many years connected with the firm of McKim, Mead & White, said he was reminded of an interview with a reporter in the Tribune who called to get a story on the residence of a noted citizen of New York. It seems that the reporter asked so many questions about simple matters connected with the general design and arrangement of the house, also as to the spelling of "frieze," "cornice" and other terms with which reporters are usually familiar, that Mr. Weeks asked him if he was accustomed to handling assignments of this character. Imagine Mr. Weeks' surprise when the reporter answered: "Naw, sir, the decoratin' and art editor is sick, and my department is horse races!"

Pacific Coast Architects Prominent at American Institute Convention

PACIFIC Coast architects were much in evidence at the Forty-third Annual Convention of the American Institute of Architects held in Washington, D. C., December 14th, 15th and 16th. The most important business transacted at the convention, to California architects, at least, was the decision to hold the next Convention on this coast. The proposition was introduced by Mr. William Curlett of San Francisco, who addressed the convention as follows:

"Mr. President and Gentlemen—As a delegate from San Francisco Chapter, I would like to say a few words with reference to extending an invitation to you to have your next Convention in San Francisco. (Applause.) We believe that now is one of the best times in the entire history of the State of California for the architects of the country to visit that section. San Francisco has been swept off the map as you know, pretty nearly, and has started on a successful career of rebuilding. It has advanced very rapidly, and we feel that we require encouragement. We would like to have you gentlemen come out to see us. We had the extreme pleasure of a visit from the President, Mr. Cass Gilbert, who delivered an address to us that has done more for the architects of the Pacific Coast than anything we have ever had before. We also had a most charming address from your Vice-President, Mr. Pond, and in California and all over the Pacific Coast the people regard you gentlemen as Michael Angelos, and would be glad to have you—every one of you—visit us so that the citizens may have a good view of what the architectural profession is represented by.

"As to the seasons and time of visit, it makes no difference what time. We have no snow out there; we have a little rain, everything is sunshine and it is pleasant at all seasons of the year to visit us. I do not know whether the San Francisco Chapter can give you the good time that you all deserve, but I assure you we will do everything in our power to entertain you and show you everything that we have in the way of improvements and attractive scenery, and we not only ask the architects, but we extend an invitation to the architects' wives, their daughters and their sweethearts, which will mean that we are not only capable of entertaining the architects, but we are also capable of entertaining the ladies, and I wish that you do not refer this to any committee, but take hold of it now and give us encouragement by voting to have the next Convention in San Francisco. I thank you very cordially, gentlemen."

Mr. John Parkinson of Los Angeles then took the floor and spoke as follows:

"Mr. President and Gentlemen—About five hundred miles south of San Francisco there is also another city on the Pacific Coast. It is located between the ocean and the mountains and the people of that city believe it to be the most beautiful place in the world. There is a Chapter there in that City of Los Angeles—a small Chapter needing encouragement, and they have instructed me to invite the next Convention to meet in the City of Los Angeles."

Mr. Parkinson was followed by Mr. John Galen Howard of San Francisco, who said:

"I have listened with a great deal of interest and delight to the suggestion of Mr. Curlett and Mr. Parkinson that the next Convention of the Institute be held on the Pacific Coast. I want to speak a few words on

this point and yet I do not know in just what capacity I want to appear. I feel as if I am 'neither flesh nor fowl.' In San Francisco I am a New Yorker, and in New York and Washington—I judge from the way that I am received—I am a San Franciscan. I consequently have to draw the conclusion that my actual habitat and center of operations is somewhere in the area, perhaps, just over in western Nebraska. If a word of encouragement to the idea that the Institute meet next year on the Pacific Coast comes more strongly from an outsider than from an insider, then I speak as a Nebraskan, and I hope that the Convention will meet in California, because it is a balmy land which all Californians have described to you a thousand times, I presume, as they did to me before I went there, but it has advantages, and is just as rosy from the point of view of Washington today to me as it was ages before I had any expectation of going there. California is a wonderful country. The Pacific Coast at large is perhaps more concentrated—the essence of the Pacific Coast at large is more concentrated in the center of the Coast, that is to say, in and around San Francisco than in any other single place. I would like to see the Convention meet again and again upon the Pacific Coast—at Seattle, at Portland, at Los Angeles, at San Francisco—but it seems to me that there are a number of points in favor of San Francisco at the present time as the meeting ground—the first common ground upon the Coast, as we call it—for the Institute, and I sincerely hope that the decision is made that the next meeting is on the Pacific Coast and that it be at San Francisco for a number of different reasons, each more conclusive to my point of view than the last. First and foremost, San Francisco is, of course, numerically, the largest city on the Coast; second, because in proportion to its largeness and consequent importance, it has the largest Chapter of the Institute—unquestionably, therefore, the most influential Chapter—the ranking Chapter of the Coast. Another reason that appeals to me, and I think will appeal to every member of the Institute, is the fact that today San Francisco is resuscitated from such a shock that has never come to any American community before, and that in a peculiar degree the architectural profession represents and is identified with every resuscitation. Our profession, gentlemen, has stood for more in the recovery of San Francisco from its great catastrophe nearly four years ago, than any other single influence, and that influence has been given and has been brought to bear in countless other ways upon other interests, upon other powers in that city in such a way as to be peculiarly representative of this body. I believe, gentlemen, that there can be no more just and reasonable thing than that the American Institute of Architects should meet upon the center and common professional field of the Pacific Coast and that means San Francisco. Further than that, I know from personal interviews with a great number of the members of the Chapter and of the representatives of the profession at large, that San Francisco wants the Institute to meet there in convention, and I use that word "Want" in several different senses. It desires it, it needs it and it feels that it must have it. It needs it, not only for its own sake, but for the sake of the profession at large in the great territory reaching from San Diego to Seattle. The influence of the Institute will make itself felt by meeting in that great center, that new, that old, that romantic center of the Pacific Coast civilization—San Francisco—make itself felt, I say, from end to end and from side to side of that great new region, and a region which not only has a vast future and considerable present, but more particularly a vast field and opportunity of influence to our public at large. Our public in California differs in certain respects from the public in such places as New York, Philadelphia, Boston, or any of our older, larger

centers, centers which have come already socially to recognize the need of the architect, the value of his services, and his just social existence. We need aid in deciding as to just what the architect is. Is he half contractor, is he half gentleman, is he promotor—just what is he? We hardly know ourselves. We need to have the fact of the architect's value, position, worthiness in general brought home to that great region of the country, which still has to wake up to the fact that he exists. Not that we have not a great many excellent practitioners on the Pacific Coast. We have. We have some of the most brilliant men in the country. I do not hesitate to say that, but they cannot stand together for the best interests of the profession, for the best interest of the community, for the two are one, inseparable—in the degree that they should, simply because the fact of the dignity, the power, the influence, the immense influence, of this Institute of Architects has not been brought home to the men in the street. Now, we want you for the benefit of the profession first of all, and then we want you for the benefit of our public. We want to give you a good time, and we feel that the natural advantages and the artificial advantages are hand in hand in combining to promise not only a good time but a most valuable time to the profession at large and the American public."

Mr. MacGonigal: "Mr. President, in order to crystallize the sentiment of this Convention, I move you, sir, that it is the sense of this Convention that the next Convention be held on the Pacific Coast."

The motion was duly seconded.

The President: "It is moved and seconded, and it is, therefore, before the Convention for discussion."

Mr. Wilcox: "I am very glad of the opportunity to favor this motion, I would say of Seattle that we stand with the Southern Pacific Coast cities in making the invitation to come to our 'neck of the woods.' I infer from Mr. Curlett's remarks that every architect is a Michael Angelo. I will say that as far as the extreme Northwest is concerned I wish that they were familiar enough with the Institute to regard them in that light, and I hope the Institute will come so, as I am sure that it will prove to be, that the Institute is composed of Michael Angelos."

Mr. Pond: "I want to second the motion, too. I have but recently tasted of the sweets of California and the Coast locality, and I want to see the Convention go out there and enjoy the same hospitality, and I am sure they will. As between Los Angeles and San Francisco, 'I could be happy with either, were t'other dear charmer away.' I do feel that we would be getting into another atmosphere if we go to San Francisco. We feel very much the atmosphere of the East, north of San Francisco, and also south of it, but in San Francisco, to my mind, there was something appealing—something, as Mr. Howard has said of the past—of the far past, that is impressive, something of the future and of the present which is brilliant; and it matters not whether the Convention goes to Los Angeles or to San Francisco, I shall have to bathe in the sunshine of San Francisco again."

Mr. Schofield: "I do not know whether it would be impracticable to have the Convention held in two cities of California, say San Francisco and Los Angeles, but that would not be unprecedented. I remember, as some of you do, a few years ago we had a convention held in two different cities. That would not be unprecedented. We started in at Providence, and then we took a short walk, after breakfast, over to Newport, and had a Convention there the next day. It is a long trip, of course, out to California, but while we are there and right near San Francisco and Los Angeles, one night's ride, we might accomplish that. I have been there; it is a pleasant country, and Los Angeles has certainly been doing wonders.

San Francisco has been building up, and I should like to see the Convention held in both cities on one trip."

Mr. Morris: "The State of Oregon has not been heard from, and I do not know whether I am the only one here or not from that State, but I want to urge that the Convention be held on the Pacific Coast, that the Eastern members may taste of the delights of the Pacific Coast, which I have so regretfully abandoned. My Chapter passed a resolution that the next Convention of the American Institute be recommended to be held on the Pacific Coast, following out the line and invitation of the San Francisco Chapter. We are just as sensible that the distance is great as any other Chapter, but we think for the good of the Institute it should be held out there." (Applause.)

The President: "The question is on Mr. MacGonigal's motion. You have heard Mr. Cram's statement of the differences that would prevail if Mr. MacGonigal's motion is adopted. In other words, MacGonigal's motion, if adopted, would then make it obligatory upon the Institute to hold its next Convention on the Pacific Coast. Are you ready for the question?"

Mr. Coolidge: "Mr. President, I want to urge one important consideration which it seems to me should cause the Convention to express its opinion, but not give its mandate, upon this question. It is this: Whereas I think it will be a great pleasure to us to meet on the Pacific Coast next year, nevertheless the purpose of our meeting in Washington must always be kept in mind. It is that at this time next year legislation may be proposed in process that we should influence—that we should be glad to be able to influence by our presence in Washington. I do not mean that I think it will be necessary, but it is possible. If we hold our Convention on the Pacific Coast we shall be a long way removed from the seat of our influence, and whereas I approve distinctly of the policy of the Institute in holding its conventions, generally speaking, in Washington, but every third year somewhere else, and hope it will be decided by the Board of Directors next year that we meet upon the Pacific Coast, I should not like to instruct them. I would rather that this meeting express its sense that the next Convention be held on the Pacific Coast, but still leave the Board of Directors free to meet any contingency that might arise in deciding the exact place. I hope that Mr. MacGonigal will modify his motion in the sense of the Convention, in which I most heartily join, and I want most heartily to thank the representatives of the Pacific Coast for their very cordial and very welcome invitation for us to go out there."

Mr. Baldwin: "I heartily concur in what Mr. Coolidge and Mr. Cram have said, and while I hope to see the next Convention held on the Pacific Coast, and shall use my small influence to that end, I think it would be a most unwise precedent to establish. In recent years it has proven that it has been absolutely necessary for the Board of Directors to have power to determine where the Convention is to be held, and for the best interest of the Convention and for the country at large I think Mr. MacGonigal will see the point and modify the form of his last resolution."

Mr. Coolidge: "Is it possible for Mr. MacGonigal to recommend the motion which he has already amended?"

Mr. Cram: "I move that Mr. MacGonigal's motion be amended to this effect; that it is the sense of the Convention that the next Convention be held on the Pacific Coast, the place to be determined by the Board of Directors, and that this expression of opinion be considered binding by the Board of Directors unless in their opinion there are the most weighty reasons against their carrying out the expressed desires of the Convention."

The motion was duly seconded and carried.

Ruminations and Cogitations

By F. W. FITZPATRICK

IT'S flattering to have The Architect and Engineer ask for and insist upon a line or two from "Old Man Fitz" regularly for every issue. The Editor apparently doesn't realize the possibilities of such an infliction upon his subscribers. Howbeit, after making my little bow and expressing my profound gratitude and surprise, I will add that what I have to say will, in more senses than one, be like unto "a wee sma' voice from out of the East," and a sort of rambling one at that. I never could, nor had time, to write a continued story, whether about love, adventure or anything of that kind, and much less anything architectural.

One of our Washington newspapers editorially commented, during the recent convention of the American Institute, upon the changed status of our architects. A few years ago, said that editorial, an architect was supposed to design a building and do what his client told him and nothing more was heard of him. Today the architects are organized and the association takes its place among the great institutions of the land. It actively interests itself in the beautifying of cities, the betterment of construction, and all sorts of things directly and indirectly related to architecture. And it keeps the individual practitioner prodded up so that he, too, has become more of a factor in his community.

All very true, and it will be our pleasant task to occasionally point out to the Institute still more things it can do. For instance, it might beat around and try and devise some scheme ot prizes or other encouragement to architects to merge their own ego a little bit into the general welfare of their communities. In most cities you'll see block after block of jumbled-up patch-work buildings, every twenty-five feet different from its neighbor, a restless, meaningless mass. Now it would be just as well for the architects, and certainly infinitely better for the city, if in each block, let us say, certain general lines were carried through and, at least, a semblance of harmony was maintained in the materials and colors used. The trouble is that each architect is so deucedly afraid that his building may look like a wing or addition to his neighbor's that he's got to pile into it all the originality he can command and everything he can crib so as to differentiate that building from all others. It's going to be a task to make him see it differently, but at the same time it is a task worthy of the Institute's efforts. One glance down any of our business streets will illustrate far more effectively than any words of mine, the splendid field there is for activity in that direction.

While clamoring for less diversity in our business streets we might with equal appropriateness raise our voices in prayerful protest against the awful, dismal monotony of our residence streets, since it has become

the fashion for speculative builders to put up rows and rows of houses in wholesale lots. Right here in Washington there are several such building concerns who are virtually doing all the house-building in the city. One man has put up within the last year or so over 400 houses in just one district, all the same plan and exterior save that here and there he does inject a different colored brick front, with the result that it looks kind of lost and as if the gentleman had run a trifle short of his regular brick that day.

I don't know of anything that can be done to prevent this sort of thing, but it certainly is utterly spoiling our cities. It has become the fashion to buy ready-made houses in our larger cities, and of course if there is that demand these speculators are going to profit by it. And those houses are as shabbily built as they are hideous to look at, tinder-boxes and fire-traps, everything skimped and scamped about them but painted up in a showy manner, just enough to gull the innocent and unsuspecting.

Just how these things are thrown together was illustrated to me the other day by a case tried in one of our courts. A purchaser was suing the builder to make him repair concrete walks and walls that had crumbled, chimneys and roofs that leaked, and a heating plant that wouldn't warm up one-half of the house. The case was decided against him. He had paid the builder and had occupied the house for three months. It was inferred, if not expressed, that the house was guaranteed for only three months, so what could he expect? If it fell down after that probationary period, why, that was his funeral—and in more senses than one, perhaps. Think of it, a house guaranteed for three months, and, gracious Peter, it's a wonder that some of them last that long!

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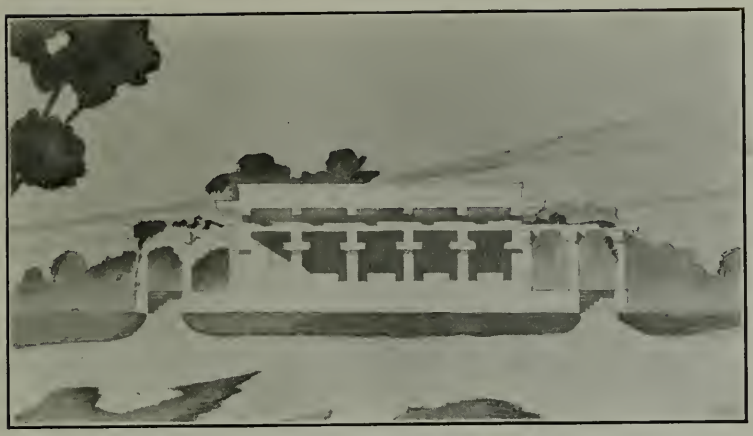
Some people seem to think we are cranky and over-zealous in insisting upon the most stringent building regulations, and particularly active inspection on the part of our building bureaus. I have before me the report of a conference of some building managers. One was bragging about how cheaply he had had a lot of changes and alterations made in a building. This building was originally built of first-class fire-proof material, and is in a very crowded district—an important building and one that the fire department looked upon as "safe." Someone else asked him how he had gotten the work done so cheaply. It was simple enough; he had made the partitions of wood, substituted lath and plaster for fire-walls and a lot of other stuff in about the same inflammable way and gotten it all plastered and covered between inspection! And he was applauded by his confreres as being real smart. And those are the men from whom we expect co-operation to get our cities decently and safely built.

And by the same token we are justified in expecting help from the insurance companies in this same direction of better construction. Indeed, most of our people gauge the excellence, the quality of the buildings they propose erecting, solely upon what the insurance companies demand in the way of fire resistance. And the companies are really beginning to do something towards fire prevention. But their agents are not always in perfect consonance with those efforts. Their object is to get business. Said one the other day: "Our business is to look after the income; the outgo is the responsibility of the companies." And that's the spirit of the thing. San Francisco of all cities ought to have learned how much dependence can be placed upon the insurance companies, as far as fire-prevention is concerned.



Design for a Steel and Concrete House
John C. Pelton, Architect

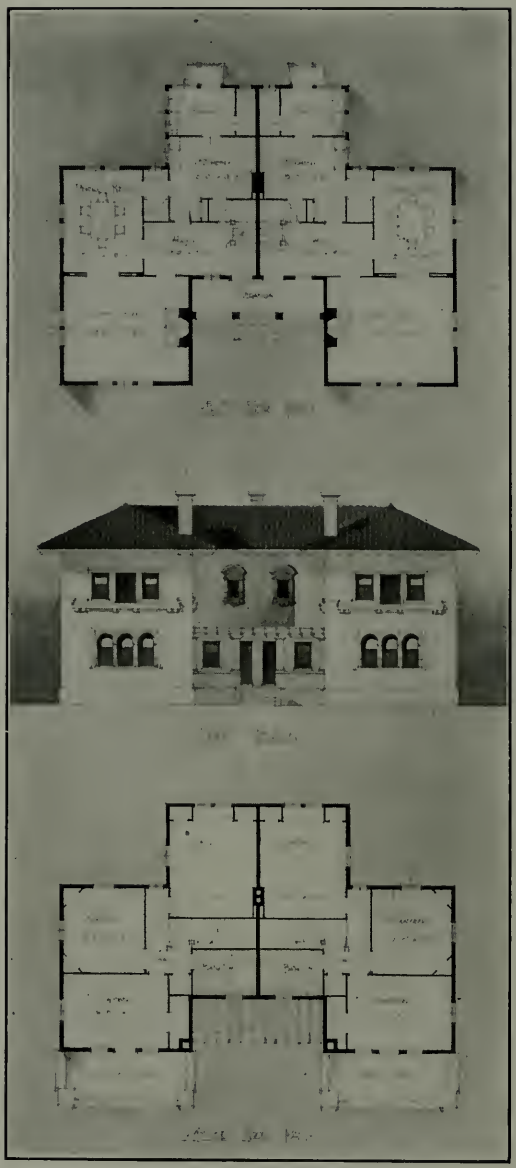
Novel Method of Steel Reinforcement for Concrete Construction

A COMPLETE steel frame for an office building, church or theater is nothing unusual in these days of Class-A construction, but a steel skeleton for a flat or a one or two-story house is a novelty that is bound to command more than common interest. A San Francisco architect, John Cotter Pelton, has invented a system of steel and concrete construction that is unlike anything heretofore devised, and if the experiments that have been carried on are any criterion, the system would seem destined to revolutionize the building of moderate cost structures, if indeed, it does not become a prominent factor in the more pretentious class of buildings.

In the Pelton system the highest efficiency with the greatest economy is the object sought to be attained. This, together with the certainty of the placing of the reinforcing members, entitle the system to the careful consideration of the architects and the engineers. If then, the further claims of extreme economy be maintained, it would seem as if a great step had been made in building construction.

The claims for greater efficiency and certainty in the results have been upheld by a number of the leading architects and engineers of San Francisco and Los Angeles, who have investigated the system and examined the working models, and indeed this would seem to be borne out by a glance at the accompanying photograph of a building recently erected at Third and Silver streets, San Francisco, by H. L. Peterson, from plans by T. Patterson Ross, architect.

It will be noticed that the usual method followed in the construction of a concrete building is reversed by the use of this system, the method up to this time being: First, the building of the wooden frame work or centering, then the placing as best can be done in this limited space of the reinforcing rods (that this is an awkward, unmechanical and generally unsatisfactory process has long been recognized by all who have had experience in concrete construction. That the factor of dependability is low is also recognized by the expert.)



Design for Double Residence of Steel and Concrete, Showing First and Second Floor Plans
John C. Pelton, Architect

Residence for Mr. A. B. Boggs, Los Angeles, to be Built of Steel and Concrete
John C. Pelton, Architect

Pen and Ink Sketch of a Two-Story Steel and Concrete House
John C. Pelton, Architect

Another Design for a Steel and Concrete House
John C. Pelton, Architect

Front Elevation of an Apartment House of Steel and Concrete, for George B. Whitmore
John C. Pelton, Architect

Showing the Pelton System of Steel Reinforcement

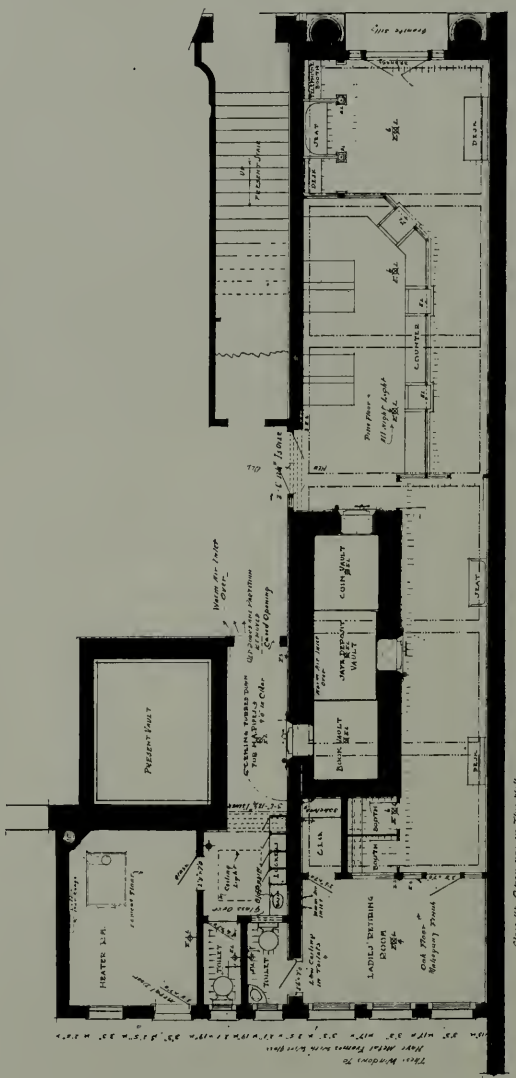
In the Pelton system the erection of the steel reinforcement is the first step, the steel structure being complete in all its parts before being hidden from view by the placing of the wooden centering, so that absolute certainty in the placing of the reinforcement may be attained. The system peculiarly demands the proper use of every intended part, and misplacement is impossible, whether through ignorance, carelessness or intention, all of which possibilities have to be reckoned with in modern building experience.

That this is a relief to the architect and his superintendent must be apparent. The rapidity with which this work can be done has been surprisingly demonstrated on the building referred to.

The placing of the centering or molds is the next interesting feature, the unit spacing of the reinforcement is maintained in the placing of the molds, so that the labor of fitting and framing is eliminated. The molds, which are in units of two, four, six or eight feet, are simply locked or wired to the reinforcing members, and when the concrete has set are instantly released and removed in perfect condition to be used again. No nailing is required.

In floor construction, such as generally used in Class-A structures, the Pelton system seems to be little short of revolutionary. There is none of the usual heavy and expensive preparatory framing and centering, the work of placing the reinforcement in position on the I-beams, the hanging of the molds, proceeding with such rapidity that the pouring of the concrete may begin almost simultaneously. In the construction of a Class-A building where rapidity and continuity of construction is an important factor, this alone would call for the commendation which this system is receiving.

The economical features are apparent: They include the rapid assembling of the reinforcement and the placing of the centering and the elimination of the waste in lumber and labor in the centering, all of the molds (as in the case of the wall construction), being removable and continuously employed.



Salinas Savings Bank Building, Salinas, Cal., First Floor Plan. *William H. Weeks, Architect*

A Bank Building With a Fifteen-foot Frontage

TO ERECT a building that would be an ornament and at the same time serve the needs of the owners, on a lot having a frontage of only fifteen feet, was the problem which Architect William H. Weeks was recently called upon to solve for the Salinas Savings Bank. That he has accomplished a satisfactory solution is apparent from the two illustrations which accompany this article—one showing the front elevation, a pleasing treatment in the classic — the other showing the floor plan, carried out in an admirable manner, with every inch of the limited available space made splendid use of. The building has two stories and basement and is built of concrete and Colusa sandstone. The interior is finished in marble and hard wood with tile floor and bronze fixtures. The building and equipment represents an outlay of $22,000.

Salinas Savings Bank Building
William H. Weeks, Architect

Another bank building designed by Architect Weeks and which will be built immediately, is for the People's Savings Bank of Santa Cruz. This, too, is on the classic order, and will cost, including the fixtures, close to $70,000.

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Roof Garden for Hotel

A feature which will be unique in San Francisco, and an innovation in hotel life, will be added to the Hotel St. Francis with the completion of the new wing which is soon to be commenced on the lot adjoining the hotel on the north. This will be a roof garden, not unlike the famous Madison Square Garden, and it will cover a large part of the area of the hotel roof. Entrance will be gained through the Post street wing, and the place will be open to the public.

Plans are now being prepared by the architects, Bliss and Faville, and Arthur Putnam, sculptor, has been called into consultation for ideas.

Classic Design
for
People's Savings
Bank Building
Santa Cruz
California

WILLIAM H. WEEKS
ARCHITECT

The Characteristics Required of Cement, Sand and Stone for Concrete*

The reader will find in the following paper much information simply told for the small concrete worker, the contractor's foremen and others whose time, inclination or training have not made available the mass of concrete literature familiar to the expert. The paper furnishes information of value, as it is written in non-technical language throughout.—EDITOR.

TO MAKE concrete there are certain essential materials. These are commonly listed as cement, sand and stone. One other material is important—water. For sand and stone there are several substitutes. All of these constituent materials we shall consider and shall endeavor to show how certain qualities in each affect the concrete. The discussion will not follow technical lines, but rather will present some plain facts about these materials, that may be of value.

Inspection.—It is generally acknowledged that the cement for all large works should be subjected to rigid inspection and tests. On very large works the sand and stone also are carefully inspected. On smaller works the cement has sometimes been tested, but the sand and stone have often been given no more than a casual inspection. Invariably the blame for failures has been placed upon the cement. And often these failures have been not only disastrous financially, but have also caused the loss of life. Many failures, doubtless, are due to a lack of proper supervision, but in some cases ignorance of the materials used has permitted the too early removal of the forms and centering. In one case, known to the writer, shavings and small blocks were swept into the forms; a column collapsed and four lives were the cost of this negligence. A post-mortem examination cannot restore life; the best it can do is to suggest some way of using the knowledge gained to prevent future losses. So when concrete fails, a post-mortem examination shows that proper inspection of workmanship and materials would have prevented the failure.

As has been suggested, the failures are generally first credited to the cement. If the cement has not already been tested and inspected, the natural and proper course is to see first if the cement is really the direct cause. If the cement had been tested and accepted, then it is necessary to look for other causes—and these are generally found. Some of them will be discussed later, but we shall consider cement first.

Cement.—Unless concrete is to be put to some extraordinary use, the cement should have certain characteristic qualities. First of all it should be sound; also it should be ground to a certain degree of fineness; it should not set, or harden, too quickly, and it should show, in tests, a good tensile strength. Generally the smaller users take it for granted that a cement of established reputation will always possess these good qualities and they purchase and accept cement on the name of the brand. Such a practice can hardly be called safe, for mistakes occur in the best regulated families and sometimes even the best mill may turn out some lots of poor cement.

Whatever other quality a cement may have, it should be sound. Most of the standard brands of cement are sound when shipped from the stockhouse. Occasionally, however, there will be a reason for shipping cement soon after it has been made and this is the time when there is a danger of unsound cement being placed upon the market. Cement is unsound usually, because it is green, not having had time to cure. After the cement

*Barge Canal Bulletin for November, 1909.

clinker, or the finished cement, has been stored until the free lime has become hydrated, or slaked, the cement generally becomes a safe cement to use. A future cause for failure in this same cement may be from an excess of sulphuric anhydride ($S O_3$) or any excess of magnesia (Mg O). An excess of either of these can ultimately destroy what is apparently good concrete. Most of the standard brands keep well within the safe limit in regard to these elements; those that do not should be carefully watched.

Upon the fineness of cement depends to a great extent its strength. It is the finer particles that have hydraulic activity. The coarse particles are practically inert and act as so much fine sand. It must not be understood that, of two brands of cement, the finer is necessarily the better, but, of the same kind of cement, that which is the finer is apt to produce better results. There is, however, a minimum percentage for the different degrees of fineness, above which all cement should be ground.

The setting of cement, as defined and limited in specifications, may or may not be important—with one distinct exception. It may matter little in the majority of cases whether or not the cement takes 30 minutes or 4 hours to take its initial set, as the large majority of cement users have the concrete well in place within the minimum time allowed, and only in cases where there is some delay does it make a difference. The exception which always does become a matter of importance, however, occurs when the cement takes what is called a flash set,—setting hard in a very few minutes. Cement of this nature is decidedly improper and its use should not be allowed.

There must, too, be a distinction made between the setting of cement and the hardening, for the latter is of much importance in the making and care of concrete. The setting of cement may be considered as being limited to that time when the cement is undergoing the first chemical action, when the cement crystals are being formed; the hardening of cement takes place in that time when the cement crystals are gaining strength and continuing more slowly the chemical action which began in the setting. It is of vital importance for one to know that he may be using a slow strength-getting cement. The removal of forms or centering, the care of the concrete itself, the time at which it is safe to place a load upon the concrete,—all these depend upon the rapidity of the growth in strength.

The strength of concrete motar and of concrete depends largely upon the strength of the cement used,—but not entirely, as we shall see later. In order to insure good concrete, however, we must first have good cement. To secure this good cement, we commonly test it for tensile strength. The reason for this is not that the cement is used to take up strains from tension, but that more reliable early results can be obtained from tensile-strength tests than can be obtained from tests for strength in compression. There are being developed, however, some simpler tests for early results in compressive-strength tests.

In making a decision as to the strength of cement we should give first consideration to the sand-carrying capacity of the cement. Tests of neat cement give no really valuable results. The tests should be made with sand, and for testing the value of cement it has been the common practice to use a crushed quartz sand. Almost all specifications have used this sand as a basis for comparing the values of cement—not that cement is ever used with such a sand, but that some uniform product may be specified in order to test the cement and not the sand. After we learn the

comparative values of cements, then we can obtain the values of the sands to be used in the mortars, by using the cement with the known value as the basis. The Committee of the American Society of Civil Engineers on Standard Methods for Cement Testing has recommended that a natural sand—called Ottawa sand—be used in testing cement, rather than using the crushed quartz sand. Their arguments for the change have been that the Ottawa sand, being a uniform, round-grained sand, makes a more compact briquette than can be made by the sharper crushed quartz sand and also that the Ottawa sand runs more uniform than the quartz sand. The points are well taken. The Ottawa sand contains about 37 per cent of voids, while the quartz sand shows 47 per cent of voids. Of both sands, all passes a No. 20 sieve and all remains on a No. 30 sieve. The difference in voids is therefore due solely to the fact that the rounded grains compact more freely, the sharp grains of the quartz sand forming bridges that make voids. These sands are being given prominence in this discussion because attention should be called to the fact that cement, which would not meet the requirement of a specification calling for tests with quartz sand might easily meet the same requirements, if Ottawa sand were substituted for the quartz. When a change in specifications for cement is made from the quartz sand to the Ottawa sand, the requirements for tensile strength should be increased at least 25 per cent.

Specifications usually call for a test for specific gravity. This is an aid to detect adulteration, but most cements run uniformly constant in this particular, except, of course, that the age of cement slightly lowers its specific gravity.

Sand.—The first consideration in the selection of sand is generally that of cost. The contractor may be willing to pay a larger price for his cement, in order that he may be reasonably sure of securing a satisfactory product, but the sand must be the cheapest that can be procured. This demand of cost, however, is gradually assuming its proper place, namely, at least partially subservient to those qualities which will produce required results. What these qualities are, depend largely upon the use to be made of the concrete, but, as a general rule, the sand must be composed of hard grains; it must be composed of well graded particles; it must not have too large a percentage of voids, and it must not contain too much loam and organic matter. However, it must be admitted that it is practically impossible to secure an ideal natural sand, but some sands are so far from the ideal that their use is impossible.

The character of the sand grains is important. The smaller grains are generally quartz, with occasionally some feldspar. The larger grains are particles from broken down sandstone or are particles of shale. As long as the sandstone grains are not from decaying stone, these sands are all right; when, however, they are soft and easily crushed, they will be much weaker than the cement and add no strength to the mortar. Shale grains are apt to be much weaker than the cement, and if exposed to the weather, have a tendency to disintegrate, but with a rich mortar each sand grain should be coated with cement and the grain would thus be protected from the weather. Feldspar also has a tendency to disintegrate and its proportion in sand should not be too great. Such sands as contain much mica do not make good sands for concrete, as the mica greatly reduces the strength.

Whatever the use of the concrete may be, it is generally desired that it shall be dense and compact. To secure this end it is necessary that the voids be reduced to the smallest possible number. Considering con-

crete as masonry, it is nothing more nor less than masonry made up of a large number of small stone, rather than a small number of large stones. We should expect that all the openings, or voids, in the large stone masonry would be filled with mortar. We also desire that all voids in small stone masonry shall be filled with mortar. We further desire that all voids in the mortar shall be filled. The amount of cement used to fill the voids in the sand will determine somewhat the character of the concrete. Just because the specification calls for a 1, 2½ and 5 proportion of cement, sand and stone, respectively, we need not feel sure that we are getting a concrete that is stronger than a 1, 3 and 6 mixture. The percentage of voids has a very great influence on the resulting concrete.

It is generally acknowledged that shot produces the same percentage of voids, whether the shot be large or small. However, if the shot be placed in the most compact position, then the voids amount to about 26 per cent, while, if the shot be placed without attention to position and voids, they amount to about 42 per cent. On the other hand, with grains of sand varying somewhat in size we find that the finer sands contain a larger percentage of voids than do the coarser sands. If sands are well graded, the percentages of voids are greatly reduced. It is possible by artificial mixture to secure materials with very few voids. For special uses this may be done. For general use it is not practical, but such natural sand should be selected as will show the best graduation in the size of its grains. As an illustration, a mortar of the proportion of 1 cement to 3 sand, in which the sand is fine and contains 40 per cent of voids, will have about 7 per cent of space filled with only water and air. What then can be expected of some of the lean mortars such as are being used in some modern cement work?

It has been generally specified that sand shall be a sharp, clean sand. In very recent years we have come to admit that good cement will adhere to a round surface as well as to a sharp flat surface. We have just seen that a round-grained sand contains less voids than the sharp sand. The word "sharp" is gradually being stricken from specifications and the words "well graded" are being inserted in its place.

It is now also freely admitted that the sand need not be entirely free from loam. It is a fact still, however, that the sand grains themselves must be free from a coating of loam or dirt. It is not the presence of the loam, to a limited extent (the writer believes not a greater per cent than five should be permitted), but the manner in which the loam is present that does the damage.

In many sands which contain loam there is also a certain amount of organic matter. This is always harmful and often is the cause of a complete failure in mortar and concrete. Sometimes it is noticed in the form of small roots, leaves or bark. Frequently the sand is coated with what may be called an organic loam. In this latter condition the organic matter will often cause a sand, which otherwise appears to be satisfactory, to lose its life, and concrete made with such sand will not harden,—sometimes not at all and again not for a considerable period.

There is often used as a substitute for sand the finer product of the stone crushed for use in concrete or macadam. This product is called crusher dust, or screening. It often makes a splendid substitute for sand—in fact, it often produces better concrete. This will happen when the particles are well graded, the use of either sandstone or limestone screening, proving very satisfactory. It often happens, however, that the screening contains a large percentage of very fine dust, and with this there is also a

large amount of particles of about ¼ to ½-inch size, without a proper proportion of the intermediate grades or sizes. The result is, that, when used in concrete, the cement becomes adulterated with the fine dust and the concrete is weakened. It is true that this fine dust will aid in producing an impervious concrete, but it also makes a more tender concrete—one that will not well stand the shock of impact.

There has been introduced into some use within the past few years a waste product that makes a very satisfactory substitute for sand, namely, iron-ore tailings. As a rule this is a well-graded material and produces a very satisfactory mortar.

It has already been suggested that it is desirable to have a dense, compact concrete. Frequently it is also necessary that the concrete shall be so dense as to be impervious to water. It is not an easy task to produce an impervious concrete, but a very great aid is to have the materials so well graded as to produce the smallest amount of voids possible—not only in the sand, but also in the cement. Various patented compounds have been introduced and the claim is made that they will produce a water-proof concrete. The compounds are largely of the alum and soap nature. The writer does not want to state that none of these are capable of doing all that is claimed for them, but it should be said that, while all give temporary results, all do not give a permanently impervious concrete. The tendency is for these materials gradually to wash out and the concrete is left just as though nothing had been used. Other materials are often used to help make an impervious concrete. Hydrated lime in the powdered form, or slaked lime, are frequently used. Many have suggested that colloidal clay, added to the cement, will produce a water-proof material. That it helps, there is not much doubt. It is an accepted opinion that concrete is often made impervious by the water which flows through a new piece of concrete that is subjected to water pressure, leaving a fine sediment in the pores. If colloidal clay is added to the original mixture, it should produce the same result but more quickly. Its use is limited, however, by the extent to which one is willing to lower the strength of the concrete.

Stone.—The selection of the stone to be used as the aggregate for concrete should be given very careful consideration. It frequently happens that a gravel can be secured more easily and more cheaply than a satisfactory crushed stone. As a result we have two main classes of concrete—broken stone and gravel. Both have good points in their favor. Another kind—cinder concrete—has a field of its own and is the best concrete that can be used under certain conditions.

In the selection of the stone or gravel, we have problems similar to those which are presented in the selection of sand. The same question of voids, size, the grading of the stone and the cleanness are all vital considerations. There is also the further question of strength. It is necessary that, since the stone forms by far the larger part of the concrete, it shall have a strength approximately the same as the cement.

The kind of stone is the first point to be given consideration, the selection depending somewhat upon the use to be made of the concrete. Good, hard stone is absolutely essential. As has already been suggested, concrete is usually given compressive strains; tension is very seldom applied, for, as a rule, this is provided for in the reinforcement, and because compression is usually the strain, it is necessary to select those stones that will stand these strains the best. Hardness and toughness, density and weight help to determine the stone. Trap-rock and granite generally produce the best concrete; hard limestone and gneiss also give good results;

sandstones are generally quite as satisfactory, but stones of a shaly nature should be avoided. When gravel is used, it is equally important that it should be composed of good, hard pebbles. Shaly gravel should not be used. All stone or gravel of a soft or decomposed nature should not be permitted in concrete.

It is just as important that attention be given to the voids in stone as in sand. There is also the same relationship between crushed stone and gravel. Stone will contain from 5 to 12 per cent more of voids than will an equal amount of gravel. The compactness of the concrete is also better with gravel.

Notwithstanding these points in favor of gravel, concrete made with broken stone is generally considered the better concrete. This opinion is based upon the general fact that stone has a higher compressive strength than the gravel pebbles. Tests of concrete of both kinds show that the whole question devolves upon the character of the aggregates used—not on the classification.

The question of cleanness is very important. It is almost sure destruction to concrete, if the stone is coated with loam. The coating prevents a proper adhesion of the cement to the stone and with this lack of adhesion the concrete becomes similar to honeycomb,—sawdust is then just as useful as stone. One of the arguments made against gravel concrete is that there is a great danger of the pebbles being coated with dirt. It is often not only advisable, but necessary, to wash the gravel. In this case it might be a better plan to secure crushed stone, as a freshly crushed stone should not be coated with dirt.

The question just considered suggests the one of cyclopean masonry. The same reasoning that demands that the stone in a concrete be graded in order to reduce the voids also suggests the use of large stone for the same purpose. The size of the stone to be used will depend somewhat on the massiveness of the structure—the stone may vary, however, from a one-man size to one requiring a large derrick. The character of the stone and its condition as to cleanness are just as important for these large stones as for the rest of the aggregates.

There are certain uses made of concrete which require special attention in the selection of the aggregate. It is becoming generally accepted that concrete is a sure form of fire-proof construction. Tests, both experimental and actual, have shown that well constructed concrete can withstand the efforts of fire better than stone, brick or terracotta. With the temperature up to 1,750° F., and then with a hydrant stream played upon the concrete, only the face of the concrete is injured—generally only from ¼ to ½ inch. Some of the materials that are used in concrete stand this test much better than others; and because they do, they should be given greater consideration when the selection of materials is made. This applies more particularly, of course, to its use in buildings, or to any use where the concrete may be subjected to high temperatures. Cinder concrete is especially well adapted as a fire-proofing material. It is true that some unburned coal may be in the cinder, but as the cinder has already been through a high temperature, it is least likely of all materials to be much affected by the temperature of a normal conflagration. It may be considered an open question as to the use of gravel concrete as a fire-proofing concrete. Tests made by well-known experts on this material give contrary results. The final opinion is, therefore, that some gravel will stand the high temperature, while others will disintegrate. The same is true concerning limestones, to a certain extent. Trap-rock is the least affected

of any of the stones and ranks next to cinders. As has been said, the fire seldom does damage further back than one-half inch from the surface. If, then, the aggregates are pushed back from the surface, the danger is greatly reduced. It has been found that a dense mixture—placed in rather wet—gives the best fire-proofing, and one and one-half inches to two inches of this will be sufficient to protect any steel that may be embedded in it. The strength of the various kinds of concrete is reduced proportionately as the heat affects the aggregate.

Water.—The question of quantity of water used in mixing concrete is not always a vital one. Where massive concrete work is put in place, large quantities of water are used and the supply naturally will be a satisfactory one. There are times, however, when small structures are to be erected at some point distant from a large supply of water. It is natural that the contractor should then look for the nearest supply. The source of this supply should be examined before its use is permitted. As an illustration: The concrete in a certain culvert failed to set. At first the cement was blamed. Investigation brought out the fact that other culverts in the vicinity had been constructed with the same cement, sand, and stone, and were perfectly satisfactory. Attention was then given to the water. This water was taken from the creek flowing through the culvert; and when this creek was followed, it was found that it flowed past a medicinal laboratory where bark and herbs were largely used. The creek was decidedly affected by the waste from this laboratory. This point well illustrates the effect of organic matter on water and concrete.

* * *

The Bungalow

1

The Charlemagne McFaddens dwelt in an imposing pile
Of brick and mortar, fashioned in the early mission style.

2

And in the house were mission chairs by which they set great store,
Whose mission 'twas to keep them all from sitting on the floor.

3

They also owned some mission hens that furnished them with eggs,
And eke a little mission dog with quaintly Gothic legs.

4

So in their early mission house they dwelt contented—very,
Till Uncle John got jaundice and became a missionary.

5

Then in despair they tore their hair and turned to higher things,
And to their early mission house they added mission wings.

6

Alas for wings and higher things! Alas! Alackaday!
Equipped with wings, their mission house, it promptly flew away!

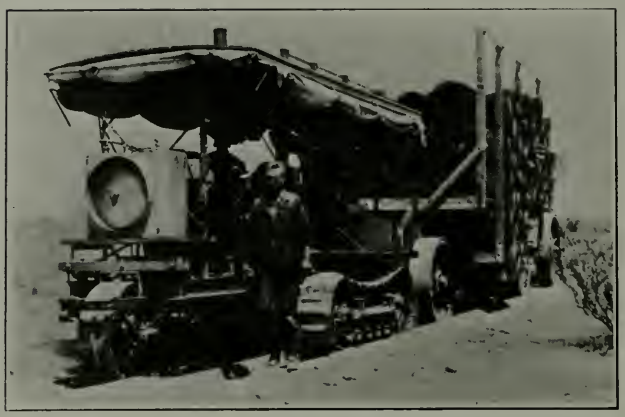
7

Now Ma McFadden might have wept, and said a lot of things;
But all she said was, "Charlemagne, you should have clipped its wings."

8

And Charlemagne replied, "My dear, I bungled, as you know,
By building high, so next time I will build a bungalow."

—Cosmopolitan.



I. Los Angeles Aqueduct—Caterpillar Traction Engine Hauling Materials

II. Los Angeles Aqueduct—Preliminary Road Construction and Power Line, Grey Ridge, Jawbone Section

The Los Angeles Aqueduct*

Causes of Low Cost and Rapidity of Construction

By BURT A. HEINLY.

The building of the Los Angeles Aqueduct at the present time is calling the attention of municipal officials and engineers throughout the world to the rapidity with which it is being constructed and the low cost at which the work is being carried on. The reasons for this are as interesting to the municipal and hydraulic engineer as is the magnitude of the enterprise to the average layman.—Editor.

THE city of Los Angeles has voted $24,500,000 in bonds for the construction of an open and closed conduit to take the waters of the eastern slopes of the Sierra Nevada Mountains as they flow into Owens River and carry the daily flood of 280,000,000 gallons southward across the Mojave desert, under the coast range and into the San Fernando valley, twenty miles from Los Angeles, where storage for irrigation and domestic use will be provided. The development of 48,000 electrical horse power with a peak load of 90,000 horse power, is one of the ultimate features of the enterprise.

The distance from the intake of the aqueduct to the place of outlet in the San Fernando Valley is 230 miles, of which 217 miles is composed of tunnels, conduit, steel siphons and flumes, with the remainder of the distance composed of reservoir area. The size of the aqueduct varies with the grade, but a fair average is 10 ft. 6 inches by 11 ft. 6 inches. The length as divided into classes of construction as shown in the most recent report is as follows:

	Miles.
Unlined canal	21.08
Lined canal	152.25
Tunnels in rock	17.24
Tunnels in earth	11.08
Siphons crossing canyons	14.19
Flumes	1.72
Total	217.56

Since this report was published, the cheapness with which tunnel has been constructed has made it advisable to increase the tunnel distance to approximately 33.5 miles, instead of 28.5 miles with a satisfactory reduction in expense and the total length of the aqueduct.

This, in a nut shell, is the Los Angeles aqueduct, the longest aqueduct in the world, and first undertaken in 1905 under some of the most adverse conditions that a hydraulic engineer has ever faced. Four more years remain for its completion.

The present rate of progress is five and one-half miles per month, or 66 miles per year. To obtain a better idea of the rapidity with which the work is going on, let us take the totals of the two last August ten-day reports, August 11 to August 21 and August 21 to August 31 inclusive. In the first ten-day period the tunnel excavation amounted to 5,224 feet, conduit 3,829 feet, canal 1,009 feet. In the second period the excavation was: Tunnel, 5,038 feet, conduit 3,615 feet, and canal 561 feet. These are typical records of the last three months. During October, 1908, the United States 31-day 3-shift record for boring in hard rock was broken with a run of 466 feet. This was surpassed in March, 1909, with a run of 476

*Illustrations and Reprint by courtesy of "Municipal Engineering."

III. Los Angeles Aqueduct—Hydraulic Dredge Under-Cutting Face of Bank With Stream of Water Under High Pressure

IV. Los Angeles Aqueduct—Excavating Aqueduct Channel by Steam Shovel

V. Los Angeles Aqueduct—Putting Concrete Cover on Excavated Channel

feet, and again in September with a run of 488 feet under adverse conditions. In April the 31-day, 2-shift record for tunnel boring in soft rock was broken by a run of 529 feet, and in August the 3-shift record of the world was eclipsed by a run of 1,061.6 feet. In the last instance the cost was $6.49 per lineal foot, a cost record almost as remarkable as the distance record. Since October, 1908, more than 20 miles of tunnels have been excavated.

With these instances let us turn to the conditions which have made them possible. These naturally divide themselves into five subjects: 1. Work of preparation. 2. Organization. 3. Politics. 4. Character of the men. 5. Housing, equipment and treatment of the men.

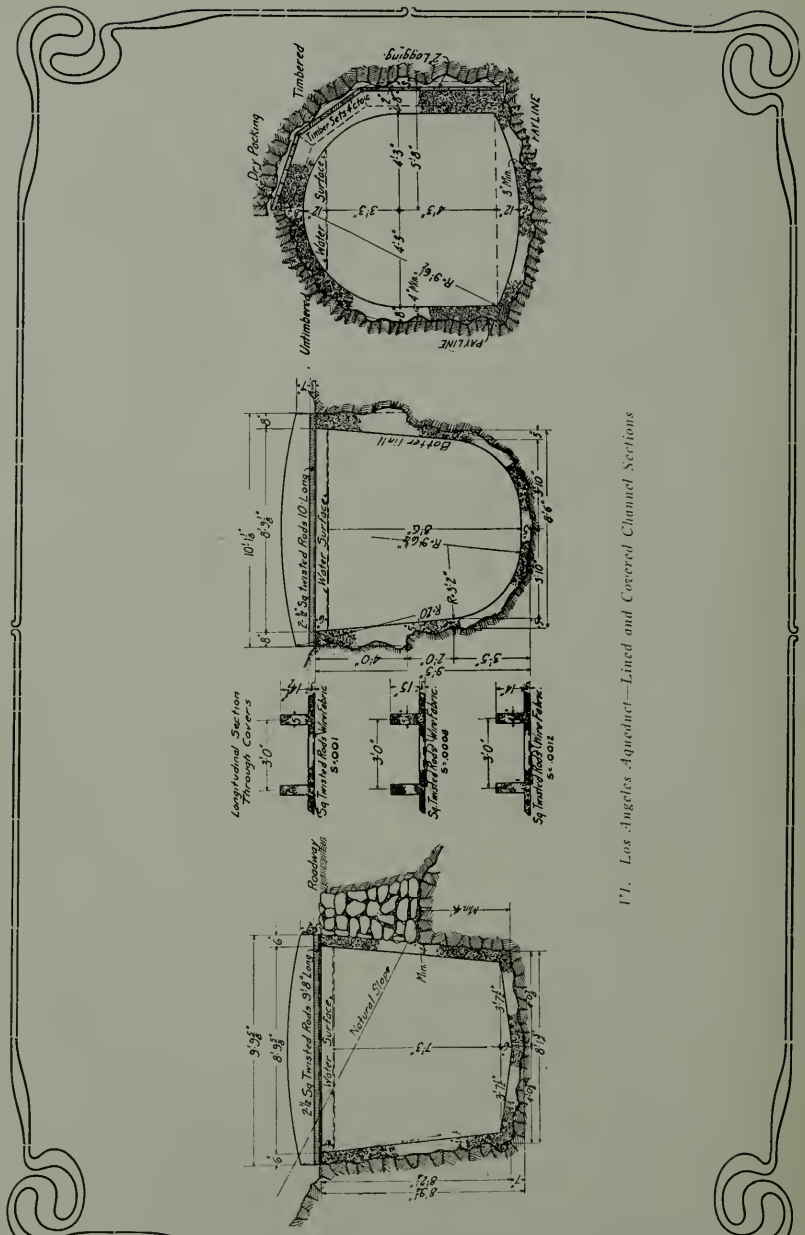
From the outset Wm. Mulholland, the chief engineer, was desirous that the work should be undertaken by "force" account under the direction of the city's engineers. This, with the exception of ten miles of tunnel and conduit in easy construction let to a contractor, is the policy that is being pursued by the Board of Public Works in aqueduct building. That it has been a wise move has been shown in the Jawbone division of 23 miles, where bids were called for. Here the aqueduct is being built at a cost which is 40 per cent less than the lowest bid submitted.

The first issue of bonds for $1,500,000 was voted in 1907; the second issue of $23,000,000 was voted in June, 1907. Exclusive of the Elizabeth tunnel (26,860 feet) where, on account of the length, work was begun 60 days after voting the second bond issue, not a shovelfull of earth was thrown in aqueduct excavation until October, 1908. Fifteen months were devoted absolutely to getting ready. A barren inhospitable region, offering neither food nor sustenance and without means of transportation or communication had to be tamed. This work was almost Herculean in its magnitude. It included the building of a standard gauge railroad 120 miles long by the Southern Pacific, the construction by the city of 4 water systems with 148 miles of mains, 216 miles of wagon roads and trails, costing from $90 to $5,000 per mile, a telephone system comprising 377 miles of No. 10 single copper wire, three hydro-electric plants with a total capacity of 3,300 horse power, 218 miles of high voltage transmission lines, a cement plant with a capacity of 1,200 barrels per day, and more than 300 buildings, such as bunkhouses, mess-halls, warehouses, hospitals, offices, engineers' and clerks' residences, etc.

It is the history of public works that no sooner have funds been provided than the desire becomes apparent on the part of the people to have the work completed and "see something for their money." In this instance, whether through blind faith or understanding, Los Angeles citizens were content and no unfavorable comment was made when fifteen months after the bonds were voted a report was issued showing only 2,000 feet of aqueduct excavated and that on the Elizabeth tunnel. That the foundations were well laid has been demonstrated over and over again in the past twelve months.

The reports to September 10 showed excavation of tunnel 120,931 feet; conduit by steam shovels, 91,838 feet; canal by hydraulic dredgers, 18,129 feet; a total of 120,931 feet, or 43.8 miles. And the hardest part of the work is being undertaken first.

The organization consists of the central offices in Los Angeles, comprising the engineering, auditing, legal and purchasing departments. These in turn are directed by a committee comprising the three members of the Board of Public Works, one of whose members, Lieutenant General Adna R. Chaffee (retired), is in charge of the aqueduct work and acts as



171. Los Angeles Aqueduct—Lined and Covered Channel Sections

chairman, the president of the Water Board and the heads of the legal, engineering and auditing departments with the city engineer. This committee meets in executive session. It has no legal or executory advisory, and yet it is the most powerful body of the aqueduct organization. It passes upon all questions of policy and upon all expenditures of any magnitude. It in turn reports by written recommendation to the Board of Public Works, which has in charge the bond moneys and the direction of construction on all public works.

The aqueduct is separated into eleven divisions, the length determined by the character of the construction and ranging from 6 miles, as in the case of the Elizabeth tunnel, to the Jawbone section, 23 miles long. Each of the divisions in which work is under way is managed by a division engineer. The engineering, purchasing and auditing departments work in conjunction, so that one keeps tab on the other. The total number of men in the field October 1 was approximately 4,000, and by means of the city's long distance telephone system, which reaches every one of the sixty camps, the forces are kept under the close personal supervision of Mr. Mulholland and Mr. J. B. Lippincott, his chief assistant. One or the other aims to be always in the field. It is just as impossible on a big job to have politics and at the same time to have celerity and cheapness of construction as it is to have your cake and eat it, too. Perhaps the whole secret of the success so far attained on the aqueduct is that politics has been ruled out with a strong hand. General Chaffee makes short shift of any one seeking favor through other than actual efficiency. His appointment was forced by the public and he came into office with no political strings and no obligations. Mr. Mulholland, as superintendent of the city waterworks for more than twenty-five years, stands very firmly on the same basis, and this fact of itself gave a large amount of assurance to electors in the $23,000,000 bond election that politics would not be permitted to creep in to squander the money.

All clerical and all field positions above that of manual labor are filled through the City Civil Service Commission. This provides for a six months' probationary period. To every man receiving employment above that of laborer it is explained that there is only one requirement, i. e., that the work set before him must be done in an efficient manner and to the best of his ability. This rule faithfully followed, he is told, he will be in line for better salary and position and that politics or favoritism will see no one advanced ahead of him. Failure to live up to the rule is equivalent to dismissal.

Preferment for excellence of work is being continually shown to the men now employed, as the work for the past twelve months has been broadening constantly. High reward is offered to practical experienced labor. The result of these requirements has been this: The Aqueduct Bureau in place of becoming a pension bureau for city hall hangers-on, or those who have outlived their usefulness and have received courtesy on the part of politicians, is filled with young and ambitious men, all Americans, who find it to their interests to make the best showing possible. A close tally system of costs, speed and thoroughness is kept in the general offices by a special department. These records are footed up every ten days and placed before the chief engineer and the advisory board, so that it is known by the "High Moguls" who are the men that are doing the work.

A construction superintendent who is ambitious knows that he is not lost in the shuffle. This system is carried to the length of publishing the

VII. Los Angeles Aqueduct—Lined Tunnel, Jawbone Division.

VIII. Los Angeles Aqueduct—Tom Flanigan, Whose Crew Broke the World's Record for Tunnel Boring

quantity of powder used on each tunnel and the cost per ton-mile of hauling with each traction engine. When the chief engineer remarks to one of the 4,000 who is running a caterpillar engine: "Boyce, you made a good run this past ten days," or "Boyce, you're not holding up your end—something the matter with the machine?" Boyce knows that he is none too small to have his work passed unnoticed.

In hauling and in tunneling, the bonus system has been adopted. In other words, the city is willing to share with the men any advantage that the city gains in unusual progress. In the different tunnels the conditions are studied by the chief engineers and an estimate is made of the average distance that should be accomplished by one, two or three shifts as the case may be, in a 10-day period. A premium dependent upon the difficulties of excavation is then paid to each man for every foot that this distance is exceeded. Measurements are made every ten days. Now, these conditions enumerated in the foregoing pay the city and pay well. The proof of this has been the results accomplished. And here is yet another feature that even the casual observer will not fail to notice. The system of no politics, advancement to the deserving and a reward for unusual work has resulted in bringing about an intense rivalry among the sixty different camps. The ten-day reports are blue printed and sent to each superintendent. From this he learns what all the other superintendents are doing on the job and neither he nor his men are desirous of seeing their camp at the foot of the column. If theirs is a crew or a camp working for a record, it is known along the entire 230 miles of line, and the details of progress go from camp to camp over the long distance aqueduct telephone line after it closes to official business at 9 o'clock p. m. The resulting esprit du corps makes every tunnel crew and every shovel gang jealous of its labor composition. From common laborer to the skilled workman there is a natural tendency to weed out the drones and the unfit. The obvious reason is that these clases will pull down the whole rate of progress. The good results of this to the city are just as obvious.

An eastern engineer in charge of one of the largest municipal engineering undertakings in the country inspected the aqueduct last spring. The part of the work which called forth repeated comments of admiration from him was the quickness and business-like ability with which the men worked. The fact that superintendents, shift bosses and others who direct the movement of the forces were constantly in personal charge of their men surprised him. An indefatigable worker himself, he is coping with politics. The evil became the more apparent to him when he saw the advancement that is possible where it is a negligible factor.

The effort has been made to provide the men with the best accommodations possible. Day labor receives $2 per day and is furnished with lodging accommodations in bunk houses designed to best meet the climatic conditions, which range from as high as 116 degrees F. in summer to 10 and 20 degrees above zero in winter. The bunk houses are built to accommodate two men in a room which is well lighted and ventilated. It has cost the city on an average of $25 to each man housed. Engineers are provided with dwellings and charged a rental sufficient to pay for the cost of construction. All buildings are lighted with electricity.

The mess is under the charge of a contractor. At the opening of the work the city handled the commissary and served a high quality of food. As the work broadened and it was found that a large and separate organization would be necessary, it was decided that the city's ends would be best served by giving the department over to private parties.

The contract was let without gain to the city. It provides that the men shall receive the same quality and quantity of food which was furnished by the city; also, that the contract may be abrogated by the city at any time upon thirty days' notice. This last clause serves as a club over the head of the contractor to insure efficiency. City commissary inspectors make weekly reports as to cleanliness of kitchens, quality and quantity of food, and the way in which it is served.

During the past summer the commissary department was productive of much complaint on the part of the men in some of the camps. This was due in most instances to the severe climatic conditions making it difficult to procure perishable foods in any kind of condition, the embarrassment of moving provisions considerable distances from the railroad, poor cooking or bad management on the part of commissary clerks. The conditions were promptly investigated by the Board of Public Works, the complaints in many instances were found to be entirely justified, and there was an immediate cleaning up. Cool weather has also cleared the situation.

All unmarried men are required to board at the city mess at the rate of twenty-five cents per meal. The same rations are served to all classes employed, from the assistant engineer in charge of the division and his superintendents down to the day laborer.

The health of the men is maintained by a medical organization, with hospitals, doctors and nurses in each division. Major operations are performed in Los Angeles at the California Hospital, one of the finest institutions of its kind in the city. One dollar per month is deducted from each man's salary for hospital dues.

The liquor problem is believed to have been almost entirely solved. Before the work was well under way the aqueduct's legal department procured the passage of a law by the State Legislature which prohibits the location of a saloon or grog shop within four miles of any aqueduct camp of more than twenty-five men. This act also provides for the closing of any saloon coming within the above provisions of the law and which had not been in existence for at least two years. The passage of the bill was secured by the city only after a very hard fight against the allied liquor interests of the state, but the effort brings large reward. Desert heat and rot-gut whisky do not mix at all, and the effect of intoxicants on the human working machine becomes quickly apparent in this climate. Mr. Mulholland, at the time the city was working for the passage of the act, estimated that if the gin shops already going up along the line like mushrooms over night could be put out of the way, the city could save from $3,000,000 to $4,000,000 in the greater working capacity of its employees and the organization by which they are held together and directed.

In addition there is a rule rigidly enforced which provides for the immediate dismissal of any employe bringing intoxicants into an aqueduct camp. A man who reaches his limit of resistance is given his time check and told to go. If he is a good laborer or miner he is told when he returns thoroughly sober and fully recovered from his debauch he will be taken back, but not otherwise.

The Los Angeles Y. M. C. A., with an aqueduct secretary in the field backed by private subscriptions, seeks to provide reading matter, writing materials, clean entertainment and recreation for the men. This organization has a very active campaign mapped out, as soon as an appropriation is made by the city for the purpose.

In summation, the organization, the high character of the labor employed, the entire absence of politics, the esprit de corps of the men, the willingness of the city to recognize their efforts and the desire of the city to give them the best possible conditions under which to work, it is believed, have brought the development of a human working machine, without equal, so far as is known, on any public work of this magnitude.

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Concrete Home Reduces Housework and Servants

MILTON DANA MORRILL, a young architect in Washington, has designed a $1,200 house in which all the work is play and servants would be more under foot than useful, says an article in the Survey. Being built of concrete it needs no insurance and no repairs. Sweeping, which is done with a hose, becomes a pleasure, coaling a festival, and the garbage man a myth.

Mr. Morrill is much interested in the proper housing of wage-earners and, as he points out, their problem has changed entirely within the last few years. Not very long ago the working man had to live near his work. Today, increased transportation facilities and lower carfare combined with the rising value of land in the factory districts has increased the residence zone to many miles around our large cities, and Mr. Morrill comes opportunely with his designs for separate houses for working people.

The remarkable feature of his house is the large number of new and excellent devices it contains. Mr. Morrill's plan is to have not less than 25 houses constructed in each locality from the same set of molds; since the molds are made in sections; however, one set admits of a limited variety of designs.

Window and door frames are cast in steel. The walls of the rooms within have no plaster or wall paper, but are finished with a smooth concrete which may be tinted, or on which a wall-paper design may be stenciled. The flooring may be of concrete or of a composite terra-cotta colored material.

All corners are rounded to give no harbor to dirt, and all fixtures are bracketed from the wall, so that sweeping consists merely in removing the furniture, attaching the hose and flushing ceiling, walls and floor of each room.

Heat for the whole house and for cooking is provided by the range in the kitchen. A cement jacket prevents the kitchen from being overheated and provides the space for the hot air chamber. Flues from the fireplaces throughout the house are arranged about the smokestack, forming natural ventilation.

The garbage is disposed of in a very simple but novel manner. A cast iron chamber is built into the chimney, and in this the garbage remains until thoroughly dry, when it is dropped into the fire box by means of a damper. The ice box built into the wall and opening both into the kitchen and outdoors, can be flushed with the hose. In winter, a screen on the outside is all the protection needed, and no ice is required.

The coal hole is on the roof and is filled by means of a chain block from the ground. It will hold two tons of coal, which is distributed by an automatic self-feeder connecting with the range, controlled in the kitchen by dampers.

Instead of a piazza the house has on the roof a solarium—a glassed-in room, furnace heated, itself surrounded by a veranda roof in the shape of awnings, and with a tile and concrete railing surrounding the whole. The roof can be partitioned and used for sleeping, the solarium providing a quick retreat in case of rain.

Proposed Hunter Apartments, San Francisco
Louis C. Stone, Architect

House of Mr. J. Nathan, San Jose
Wolfe & McKenzie, Architects

Modern Architecture and Its Relation to the American Home*

By KIRKLAND K. CUTTER, Architect.

MODERN domestic architecture is the final evolution of customs and traditions as old as the race. While the scientific development of the past two centuries has done much toward organizing these traditions into a consistent unity and has added those things which we call "modern conveniences," home building of today is the renaissance of the home life of the world.

Art is unaccountable. From the rude straight line drawings of the American aborigines—the severe and unnatural portraiture of the Egyptians—the stiff frescoes of the Assyrians, to the warm and life-like painting of the Florentine school—painting has told the dreams of love and war of the human heart. It has been ideal and prophetic. But architecture has been the monument upon which the nations of the world have recorded their civic and domestic victories. Their arts have told us what they dreamed, but their architecture tells us what they did, and into their homes have they written their individuality.

The Moorish invasion of southern Europe left behind it a train of churches and castles, with slender columns, delicate tracery, soft colors, and almost musical harmony throughout, that tell, more eloquently than any literature has done of this strange African race which possessed an innate refinement centuries in advance of its time. The heavy columns, severe lines, sharp angles and lack of ideals all through the old Gothic architecture tells the tale of the Teutonic mind and explains why they have become the scientists of the world. The broken roofs and rich coloring of the Byzantine architecture records forever the passionate and erratic forefather of the Italian. The stately columns and serious classic lines that gave to the Hall of the Doges the atmosphere of a cathedral, tell that centuries ago the church gave character to the architecture of Venice, in the days when the church and state were one. And the Swiss mountaineer, who set up his beautiful chalet in the mountains, drew its roof far over the side, and then, because the wooden pegs that held the roof on offered but small resistance to the wind under its projections, weighed it down with tons or rock, gave to the world one of the most charming conceptions of home that has come from any race. But the beauty of this peasant's home was like the glory of his mountains—all on the outside. It was he, rather than the proverbial Irishman who "kept his pig in the parlor." The one room within this chalet, all lovely without, was home for man, horse, cow, goats and children. The fire on the earth floor leaped up toward the wooden chimney in the roof that gathered the smoke through a hopper-shaped flue suspended a half dozen feet above the floor. The dreams of this hardy peasant were not a passion, but an inheritance inspired by his mountains and belonging to a bygone and unrecorded age.

Modern domestic architecture has sought to assemble the ideals of every age and nation, and adapt them to the enormously expanded tastes and requirements of modern civilization. It has sought, not only to make the home beautiful, comfortable and practical, but also to make it an influence that shall enter into the building of the lives that are largely spent within its walls. Only lately has the educational and aesthetic value of the home been seriously considered in domestic architecture. The owner

* Mr. Cutter's original contribution appeared in Opportunity Magazine, Spokane, Wash.

of one of the most beautiful homes in Spokane said recently that the servants who came into his home very soon became more quiet, gentle, serious and refined in speech and manner. They could not resist the constant appeal of walls, windows, tapestry, furniture, pictures and even the books into which they had come to live.

The first step in building the modern home is the choosing of a location. In the beautiful West selection is possible. Here one may make choice between valley, hillside, plain or forest. One home in Spokane is being built on grounds of almost mountain ruggedness. In the space of four or five acres, within ten minutes' ride from the heart of the city, are thirty springs and a beautiful brook full of mountain trout that jump out of the water like so many seals when they are fed, bumping their heads loudly together in the race for the crumbs that are thrown to them. On one side is a great stone wall that is being made into a wall garden. In another year this wall will be a solid mass of trailing vines and wild flowers. Mr. Elbert Hubbard recently pronounced this the most picturesque home site he had ever seen.

Another prominent Pacific Coast citizen, who is preparing to build a beautiful home, first called to his aid the most eminent landscape architect in the country and had a number of locations examined with reference to their possibilities for a home building. The grounds, the trees, the flowers—even the surrounding landscape—are all integral parts of the home and must be determined before the plans for the house can be made.

The style or class of house to be built is determined first of all by its location. If the house is to be set in level, wooded grounds, the Colonial or Georgian style may be chosen, and the house painted with green shutters and trimmings; but never a white house in the open glare of the sun. If the house is to be on a hillside, or in very rugged grounds, the Swiss chalet, or Dutch style is appropriate. The lines of the house also must harmonize with its surroundings. If the house is on a gently sloping knoll, the roof must have a very low pitch to conform to the surrounding contour.

In planning the house itself, the main results to be obtained are spacious living rooms (and every part of the house to be lived in all the time). Even the servants' quarters must be comfortable and homelike, and this is one of the modern advancements in house building. Modern domestic architecture has forever banished two elements supposed to be necessary in the old-time house—the musty smelling parlor or "spare room," and the back door. The breakfast room should have plenty of sunlight and the principal chambers should be on the leeward side of the house. When ever possible there should be a great fireplace; it cannot well be too generous in its proportions. Sometimes these fireplaces are ten or twelve feet wide and four or five feet deep, with open chimney and brick seats inside each end, where one may sit on cold nights by the crackling fire and toast his feet to his heart's content. Not only are these huge fireplaces of the greatest value for ventilation, but nothing adds so much to the cheer of the home.

The finish and details of the rooms should be plain rather than ornate. Modern good taste has well-nigh banished varnish in house finishing. The old-time "piano finish" has given place to oiled woods, which are much more enduring and much more elegant; and along with the varnish has gone the elaborate cabinet of our colonial days.

Last, but far from least, come the furniture, the decorations, the draperies, the pictures, the books, the bric-a-brac and what not. Many an architect has gone out of a house, into which he had put his very soul,

discouraged and dismayed at the havoc which that dangerous triumvirate —the housewife, the decorator and the furniture dealer—had made of all his work. Where the architect had left soft lines and exquisite harmony, he finds glaring discord and impossible combinations.

In the furnishing of a house, two or three fundamental rules should be held to as sacredly inviolable. One is that the furnishings throughout should be as rich and elegant as may be, but never pretentious; and as far as possible, every article should mean something. Another is that nothing should be out of key. Every room should be so arranged that, upon entering it, one may take up the details one by one.

These are the material of the modern American home. From the traditions and customs of all the ages we have claimed the best. Modern science and the aesthetic arts have been heavily levied upon; nature has yielded her choicest nooks; and from them we have gathered together the grounds, the terraces, the brooks, the ravines, the winding pathways, the flowers—the house itself testifying to the thought and dreams of a hundred generations, the furnishings bearing witness to the arts of every nation. All these can the master builder bring together.

But the house is tenantless yet, and, when the architect has gone, there remain to come she who is to be its queen, he who is to be its master and they who are to be its joy and sunshine. And perhaps it may be true that, just as it has taken the dreams and the arts of the centuries to create these grounds and house and furnishings, so has it taken the experiences of all ages to create the most beautiful institution the world has known—the American family; and the modern home will tell its story to the coming generations.

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Cement Jardinieres

THE larger sizes of jardinieres for bay trees, box trees, and good-sized decorative plants have in the past been so expensive that they were beyond the reach of many modest homes. The new cement tree jars, however, are fully as attractive and much less costly. One can get a jar twelve inches high and fifteen inches wide at the top for two dollars, while a pot with room enough for the larger sizes of bay trees costs but four dollars.

Cement is a material so plastic and capable of such refinement of treatment in surfacing and coloring that it is certain to revolutionize our methods in growing plants about the home. Already many of the concrete houses have permanent places for gardens as a part of porch or balcony—a happy omen for the future when such possibilities will be more fully realized.

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Useless Noises

"Nothing lost here but the squeal," declared the pork packer. "Are you as economical in conducting your business?"

"Just about," answered the visitor. "I'm a lumber manufacturer. Nothing wasted but the bark."—Pittsburg Post.

House of Professor Holway, North Berkeley, Cal.
Geo. T. Plowman and John Hudson Thomas, Associate Architects

House of Mr. Joseph J. Mason, Berkeley, Cal.
Geo. T. Plowman and John Hudson Thomas, Associate Architects

Residence in the Fairview Tract, Berkeley, Cal.

The Hillside Cottage

WHEN Berkeley's poet and author, Charles Keeler, organized the Hillside Club some five years ago to encourage the building of Hillside cottages, he probably little realized how universally popular that type of home was destined to become. The then bare Berkeley hills are today dotted with picturesque bungalows, cottages and redwood shakes, the natural beauty of the hills affording a background equal to any scheme wrought by the world's greatest landscape artist. The architect need only study his plan a little to work out a scheme that is at once harmonious and in perfect keeping with the surroundings.

Among the architects who have been most successful in planning the Hillside home are Messrs. George T. Plowman and John Hudson Thomas. A few illustrations of their work are shown herewith. During the past year no less than thirty of these charming homes have been designed by this firm, the cost of the houses ranging from $3,000 to $8,000 each.

The chief problem of the hillside cottage is to secure a good foundation and ease of approach to the main entrance without the use of too many steps. In some cases the house grows from the hill better if steps are introduced between the principal rooms. Some clients, however, object to this plan because of the inconvenience and extra labor in housework. But the added effect of a few steps, say from the entrance hall down to the living room, would seem to more than compensate for the extra steps.

The sidehill house admits of a study or billiard room under the principal room of the house and very pleasing effects may be secured by building the sleeping rooms and porches beneath the sloping roof.

In exterior treatment, the hillside cottage calls for a rustic effect following the Swiss Chalet type with split shakes and redwood panels. The small additional cost of a sidehill house is more than offset by the charm of the surroundings and splendid view of the distant country.

Former Residence of Judge M. E. Hyland, San Jose, Cal.
Wolfe & McKenzie, Architects

The Department of Landscape Architecture at Harvard University*

By PROF. JAMES STURGIS PRAY.

THE recent appointment of a special committee of this society, the function of which, I understand, is to investigate the instruction in Landscape Architecture in different institutions in this country and to report to the society with recommendations, seems to render particularly appropriate at this time some account of the work of our Department of Landscape Architecture at Harvard. The opportunity to tell the members of the society this evening something of the aims and methods of our instruction, and our plans for increasing its range and its thoroughness, I most heartily welcome, because I believe that a more perfect understanding and co-operation between the Society and our Department, and in general, between the profession and the professional schools is, in the interest of all concerned, greatly to be desired. Such fuller understanding and more perfect co-operation should be of advantage to the profession and the society, since they ought to be able to look to the technical schools which furnish instruction in landscape architecture for their most promising recruits and valuable assistants; and of advantage to the schools, since the soundness and thoroughness of their instruction must receive its final test in the success of their graduates, as assistants in the offices, in independent practice, and in the ranks of this Society. This Society and the profession it represents should also benefit materially by every introduction into a college curriculum of an untechnical course in Landscape Architecture, which spreads, among those who are not going to practice the profession, familiarity with the principles for which it stands, and with the ways in which its service is of value; for such a course is a most direct and important means of increasing the profession's clientele and the number of appreciative voters on park, playground, and city-planning questions.

Instruction in Landscape Architecture at Harvard was first given in the fall of 1900, the instructors, Mr. Olmsted and Mr. Shurtleff, belonging officially to the Department of Architecture, but forming, in many important respects, virtually a separate department. It was natural that such pioneer work of instruction should be begun in intimate, and in certain respects, dependent, relation with some longer established subject. So far as any instruction in our art has been included in the offerings of other institutions, it has, almost without exception, grown up under the administration or general direction of the instruction in Agriculture or Horticulture, and is still dominated by that point of view. We feel that in view of the professional standards upheld by this society which recognize Landscape Architecture as a fine art, co-ordinate with that of Architecture—in short, as an art of Design—this approach from the side of Agriculture or Horticulture, or even Engineering, is a left-handed approach to the subject, and is not so likely ever to develop in the students a high power of artistic creation. Accordingly, it has always seemed to us a very decided advantage that our work began and continued in such close association with the instruction in Architecture, and that its point of view was the larger one which tended to emphasize the subordination of the materials used to the principles of their arrangement, making these mate-

* Extracts of a paper read before the American Society of Landscape Architects.

rials—the ground, plants, and so on—all subserve the effect of the organized whole. I believe the society will agree with us, however, that it was by no means to the interest of our profession, or in accordance with our point of view as a society, that the organization of our instruction in Landscape Architecture at Harvard should continue indefinitely to be such as to give the impression, either to our own students or to the public, that Harvard regarded Landscape Architecture as merely one particular kind of Architecture, or that the profession of Landscape Architecture was not yet one of the well-recognized technical professions.

It was with this conviction then, rather than with the least desire for any less intimate and heartily co-operative relation with our colleagues in the Department of Achitecture and their body of instruction, that we sought, and secured last spring, establishment as a separate Department of Landscape Architecture, co-ordinate with that of Architecture both in the Division of Fine Arts and in the series of technical professions recognized by our Graduate School of Applied Science. By the establishment of a separate department of instruction and by the endowment by Mr. Nelson Robinson of the Charles Eliot Professorship of Landscape Architecture, Harvard is, I believe, the first university or technical school to recognize our art and profession as co-ordinate in rank and importance with our most nearly related art and profession, Architecture.

Our instruction is of two sorts, in recognition of the two different aims already mentioned: First, the training of certain young men to become efficient office assistants and eventually successful landscape architects of independent practice; and, second, the instruction of a much larger number of other young men in the purposes, principles, and uses of Landscape Architecture, in order that they may later be more informed and appreciative, as clients and citizens. This latter aim we seek to attain through a popular lecture course, open to undergraduates in Harvard College, and counting for the bachelors' degrees in arts and science. Naturally, in the first years, this course was relatively small, but it has steadily increased in numbers, until this year it started in with about seventy-five men. Since it began in 1900, about five hundred men, representing all parts of the country, have been enrolled in it. We believe that it will continue to increase in size, and spread its message more and more widely.

Our professional instruction, now in the Graduate School of Applied Science, is arranged to meet the needs of two classes of men; namely, those who are equipped to take, and can afford the time and outlay to take, our full training leading to the new professional degree of Master in Landscape Architecture (M. L. A.); and those who, either by reason of more specialized previous training or by lack of means or fitness, cannot take the whole course. These latter are given every possible opportunity to specialize. We believe that the number of special students is likely to increase, but since those specialists are, in the long run, most competent and most successful who have had, before specializing, the most liberal foundation, we hope that our regular students of graduate standing, who come to us to qualify for the professional degree, will always form the main body of our students.

In order to be a candidate for our new professional degree of M. L. A., a man must already have received a bachelor's degree from some institution in good standing. Moreover, to enter upon our work in Landscape Design he should previously have acquired respectable ability to draw freehand in pencil and in wash, experience in making and using topographical surveys and drawings (in projection and perspective) of architectural and landscape forms, and a sound elementary knowledge of physics, geol-

ogy and physiography, of botany (including a familiarity with the plants commonly used in landscape design), and of the history and principles of the fine arts, especially architecture and landscape architecture. Slight deficiencies in preparation will not necessarily debar a student of ability and general fitness from beginning the advanced studies for the degree; if the student lacks the necessary knowledge or training in some one or more of the preparatory subjects, he may complete his preparation by taking appropriate courses after entering. In fact, some of this preparatory training can be acquired in the Harvard Summer School, during the summer before regular entrance upon our work, as, for instance, certain of the work in Architecture; and, similarly at the Harvard Engineering Camp at Squam Lake, New Hampshire, the necessary experience in Topographical Surveying.

Once equipped to enter upon our first course in Landscape Design, the student's time is exclusively devoted to professional study, for a period covering normally two years. The problems solved during this period can conveniently be grouped under two heads, first, private residences and related problems, and second, public recreation areas and the larger problems of city planning, with all the special problems that these involve. The arrangement of our courses recognizes this convenient, and, we believe, important distinction, the student in the first year receiving instruction in the former, and in the second year, in the latter, although these years of work are flexible units, and depend for their actual length upon the ability and previous preparation of the student. In both these fields, we aim not only to give what training we can in Design, but all possible instruction which will aid the student in preparing effective working drawings for the execution of his designs, and we endeavor to prepare him to develop as elaborate or as simple working drawings as the circumstances of the problem may demand, and in any case, to develop them in the most direct and economical fashion.

In the first year, along with the work in Design, to which—of course—the student devotes more time than to any other aspect of his training, he carries a course in Construction, and a course in Planting Design, and devotes about nine hours per week to Freehand Drawing. The course in Construction deals especially with the making and interpretation of grading plans, profiles, and sections, with matters of drainage, and with road construction and maintenance, and will next year probably include the instruction in masonry and foundations. It also includes a consideration of the various minor constructions with which the landscape architect is particularly concerned, in connection with private dwellings. The course in Planting Design, starting with very simple problems, works up to more and more complex ones of planting of residence grounds. Thus in this first year, a series of private place problems is assigned in the Design course, each problem being made, so far as possible, a real problem, based on actual topography which the men can visit with a print of the survey in hand. They prepare a preliminary plan for the client, whose needs and desires have been very explicitly given in the statement of the problem. This preliminary plan is checked up on the ground by the student, who is taught to make those nice adjustments to local circumstances which are the hall-mark of truly competent work. The plan and its lines, thus determined, are then given some effective rendering, and presented to the client (the instructor), sometimes with a covering letter, sometimes in a personal interview. As a result of this interview, it generally happens, as in practice, that certain modifications are made, and then the student proceeds on the basis of the instruction which he has been getting in the

Construction course, to develop for this problem whatever may be needed in the way of a grading plan or other construction drawings, and prepares actual specifications for the carrying out of these constructions, together with estimates of quantities of material required and estimates of cost, on the basis of arbitrary figures given for the purpose. Although such figures are necessarily arbitrary in the particular instance, the problem is a sufficiently definite one for the instructor to be able to approximate to what the cost would be at the time, and the student is given some idea of the range of costs for such work under different conditions. Whenever possible to arrive at anything at all reliable by so doing, a forecast is made of the probable cost of future upkeep of the design when carried out. Although so exceedingly important in practice, this, we would probably all agree, is at best very difficult to do satisfactorily, even when one has at hand all the data of an actual job, and as it becomes still more speculative in even the most real problem that can be introduced into a course like ours, about all we have seen our way, as yet, to doing in this matter is to make clear to the student the exceeding importance in practice of considering this aspect of his plans with the utmost possible care and definiteness, and of developing through his experience a certain sense of relative maintenance costs. Finally, in the course in Planting Design, planting plans and planting lists are prepared for the planting of these same residence grounds, and again, estimates of costs of material and labor are made by the students, the former from nursery catalogues, with which the department is kept well supplied and which the men get in the way of using. At the beginning of this first year (or of the following year) the students, under a special arrangement with our Division of Forestry, have a solid month of work in the new Harvard Forest at Petersham, acquiring an introductory knowledge of forest botany, silviculture, forest measurements, and forest protection.

The same methods are, so far as applicable, used in the work of the following year, the last half of which is ordinarily devoted to a thesis, which is made, even more closely than is feasible in the other problems, to simulate a problem in actual practice, and is our final test of the student's fitness for our professional degree. In this year the students are concerned with problems relating to communities of men, these problems ranging from small park and playground layouts, to schemes for the development and improvement of cities. Here, similarly, the course in Design is accompanied by a course in Construction, which takes up more at length the subject of roads in their relation to traffic and the life of the community, matters of public water-supply, sewerage, traction, lighting, and so on; and the problems in planting design relate particularly to the planting of public recreation areas and associated problems, such as street planting.

As regards this portion of the field—that concerned with the larger public problems, now receiving so much consideration by our more progressive municipalities—we feel that it is rapidly coming to be of such exceeding importance to our profession that some further enlargement of our instruction in the science and art of city planning is called for. In fact, constant applications for men trained in this field make evident a demand which we have heretofore not been adequately prepared to meet. Accordingly, I have just today submitted to the Faculty Committee on Instruction, as an addition to our present programme, an advanced course on the Principles of City Planning; and, while I am not yet in a position to announce publicly this course, since there has not yet been time for it to be formally accepted by the Faculty, I have reason to believe that it

will be given next year. If so, it will be the first regular course on the principles of city planning to be offered, so far as I know, in any of our universities.

Our instruction is now happily so organized that we are in a position to welcome a student to regular or special work at any time during the academic year that may be most convenient for him to come to us, and, in fact, under certain circumstances, even at any time during the summer vacation; and to put him to work at once. He starts in where he is found to be fitted to start, and stays with us as long as may be found necessary for him to attain to our professional degree, or for such other length of time as circumstances personal to his particular case may determine.

In placing our professional instruction on a graduate basis, our idea is that the requirement of the Harvard A. B. degree or its equivalent is the most practicable method of insuring, in the applicant for the technical degree, that breadth of view and of sympathy which is essential as a foundation for the technical training of the ideal landscape architect; and our degree of M. L. A., being a master's degree, is intended to be borne by a man first generally trained to a broad view, then specially trained to efficiency in his field.

Regarding certain materials and certain technical processes such as grading and planting, the trained landscape architect must, of course, be thoroughly informed. But he cannot possibly have, himself, intimate technical knowledge of all the different forms of construction in terms of which he must design. He needs, therefore, to be prepared to associate and co-operate with architects, engineers, nurserymen, and experts of all kinds in branches of knowledge allied to landscape architecture, and he must be able to get their point of view, and deal with them without unnecessary friction. He must know enough about their work to produce designs which will not prove impossible of execution, when the details come to be elaborated by these collaborators, each working in his own field. He must also possess the ability to enter sympathetically into the desires and ideals of a great variety of clients. Obviously no school can supply, and if it could, no single student could, in any reasonable time, acquire as full training as is theoretically desirable either in the broader general field of value in his relations with his clients, or in the associated special fields; but, we believe that a school of Landscape Architecture can do a good deal toward not only giving a man a good general view of the field of Design, but also such definite special work in Architecture and Engineering that in later life his practical experience will at least not lead him astray by the superficial jealousies and conflicts between Landscape Architecture and its sister professions. Eventually he should know that if a good designer knows the technique of any kind of construction, he can do good design with that construction; he should come to see that if a man is good enough, there is no law or reason to stop his practising Architecture, Landscape Architecture, Engineering, and Landscape Painting. But he should also see that the very reason for the existence of different professions is that life is too short, and ordinary men too incapable, to master the technique of more than one profession. And I think that he is likely to find very quickly that the technical knowledge which must be acquired by the man aspiring to practise Landscape Architecture as we all regard it, is sufficient to keep the landscape architect busy in his own field, and to make the well-informed architect or engineer pause before putting forward the claim that he is a skilled landscape architect, as well as a competent practitioner in his own profession.

There are some essential powers which no school, under any circum-

stances whatever, can do much to develop except indirectly, and which, if present at all, develop more or less quickly in the subsequent mill of actual practice; such, for instance, as the power already noted to get on effectively with men. Here it is not a question of inadequate opportunity on the part of the school, or lack of time on the part of the student: the impossibility of teaching such things is essentially inherent. Thus, too, we cannot give a man "gumption"—(Would we could, in some instances!) —but a man does not study with us long in Design or Construction, before we know definitely whether or not he has that faculty, and are able to make a reasonably safe forecast as to the likelihood of his developing it sufficiently ever to attain to our new professional degree. For this degree is intended to be more than a voucher for the recipient's having passed with credit in certain courses. It can still be withheld, if the candidate has not convinced us of his initiative, self-reliance, and ability to deal with an actual problem in a fundamentally practical way; in short, that he is of the stuff which will probably make him first, useful as an assistant in some good office, and later, a competent and worthy practitioner and member of this society.

There are many men, however, who wish to become landscape architects, but have little or no collegiate training, and, at the time of life at which they have decided to become landscape architects, cannot reasonably afford the time to get it. Our course is for these men as well, as far as they are qualified to follow it, and some of our most promising men are of this class,—men not previously untrained by any means, but men with a one-sided preparation who usually intend to specialize in a branch of the work where this one-sided preparation can be put to the best use.

* * *

Swimming Pool Feature of Church

A SAN FRANCISCO firm which has met with considerable success in the contracting business since the fire four years ago, is Gutleben Brothers, with offices in the Monadnock building. A number of very creditable structures have been erected by this firm, and two or three illustrations are shown herewith. The Green Street Congregational Church was designed by Francis W. Reed of Berkeley. It has a seating capacity of 700 persons and the interior arrangement is somewhat different from the average church, in that it contains besides auditorium, a gymnasium, bathing tank, social rooms and roof-garden.

The Beverley apartment house at Fulton and Grove streets was designed by Joseph Cohen and was built at a cost of $26,000. It is a three-story frame building with a splendid arrangement of apartments, each having its private entrance hall, beam ceilings, etc.

Gutleben Brothers have just completed at the corner of Army and Mission streets an attractive concrete warehouse for Edward W. Mitchell, the plans being by Architect Charles J. Rousseau. Another building erected by the firm is a two-story structure at the corner of Second and Mission streets for Howard D. Smith. The illustration of the Club House shows what one of the Gutleben Brothers was able to accomplish with odds and ends of material left from various buildings constructed by them. Good use has been made of the spare lumber and other materials that otherwise would probably have been thrown away.

Green Street Congregational Church, San Francisco

Beverley Apartments, San Francisco

Club House, Alameda Estuary

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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Standing Committees of San Francisco Chapter, A. I. A.

President William Mooser of San Francisco Chapter, A. I. A., has appointed the following standing committees for the current year:

Entertainment and Reception of Visitors and Convention.—James W. Reid, chairman; William Curlett, Henry A. Schulze, Clinton Day, Louis C. Mullgardt, Chas. W. Dickey and Wm. A. Newman.

Legislative.—B. J. Joseph, chairman; Kenneth MacDonald, Jr., F. H. Meyer, Louis S. Stone, J. Cather Newsom and John D. Hatch.

Commercial Bodies.—G. B. McDougall, chairman; Clarence R. Ward, Matthew O'Brien and Sylvain Schnaittacher.

Headquarters.—Geo. Rushforth, chairman; Sidney B. Newsom, E. J. Vogel, August G. Headman and Wm. H. Crim, Jr.

Competitions. — G. B. McDougall, chairman; Matthew O'Brien, T. J. Welsh and Perseo Righetti.

Fine Arts and City Adornment.—Albert Pissis, chairman; John Galen Howard, Louis C. Mullgardt, B. J. S. Cahill, Willis Polk, Lewis P. Hobart and E. A. Coxhead.

Building Laws Committee.—E. J. Vogel, chairman; Louis C. Mullgardt, G. A. Wright, G. A. Applegarth, E. G. Bolles and John Bakewell, Jr.

Revision of Constitution and By-Laws.—Louis C. Mullgardt, chairman; John Galen Howard, G. A. Lansburgh, Merritt J. Reid, Ralph W. Hart and Henry A. Schulze.

Alameda County Infirmary Competition.

The Supervisors of Alameda County have appointed Walter J. Mathews and John G. Howard, prominent architects to be a committee on rules governing the contest for plans for the proposed County Infirmary. It is proposed to erect a series of buildings on the pavilion plan. There are to be extra wards for contagious diseases and a special building for tubercular cases. The buildings are to be fire-proof and will represent a possible total of $500,000.

Portland Architectural Club.

The following are the officers of the Portland Architectural Club for the present year:

President—Joseph Jaccoberger.

Vice-President—D. L. Williams.

Secretary—J. A. Fouilhoux.

Treasurer—J. G. Wilson.

Municipal Committee—E. M. Lazarus, chairman; J. W. Swope, A. E. Doyle.

Educational Committee—H. A. Whitney, chairman; H. E. Raymond, Martin Schacht.

Scholarship Committee—E. F. Lawrence, chairman; M. H. Whitehouse, E. T. Root.

House Committee—F. T. Webber, chairman; Ernst Kroner, E. E. Gilmer.

Berkeley Six-Story Dormitory Building.

Plans for a men's dormitory of the most sumptuous order have been submitted to the University of California authorities. The structure is to be a six-story steel frame building, running from Durant avenue to Channing Way, half a block east of Telegraph avenue and will contain a dining-room to accommodate a banquet board seating 1,000, a barber shop, cigar stand, ice-cream parlor, bowling alley, bakery, library, and all the comprehensive equipment of a modern hotel fitted up exclusively for men. Each of the upper floors will have 48 rooms. McDougall Brothers are the architects.

San Francisco's New Building Law.

San Francisco's new building law is now a reality, having been adopted by the Board of Supervisors in a bill passed to print early in December. McLeran alone voted against the measure after a determined but unsuccessful effort to have incorporated a declaration of two more years of grace for the frame shack buildings in the fire limits.

"Nobody believes for a moment that these buildings will come down by the time limit, May 1, 1910. I move that the time be extended to May 1, 1912."

"That declaration two years ago by the board was about as illegal as the shacks themselves," said the mayor. "I will have to rule your motion out of order; it has nothing to do with a building law."

The ordinance passed to print enacts full provisions covering all features of building. It provides a height of 84 feet for class-C buildings, whether of the brick wall or of mill construction within, and makes impossible frame structures of more than three stories except on slopes where half of a building may contain four.

Architect Schmolle's Fine Building.

Construction work is progressing satisfactorily on the five-story building designed by Architect W. S. Schmolle at California and Battery streets, San Francisco. Mrs. G. S. B. Saunders is the owner, and the estimated cost of the structure is $150,000. The building will be strictly class-A, resting on a pile foundation, supplemented with continuous reinforced concrete slabs. All exterior details will be rendered in light gray tones of concrete. The elevators will be approached by a lobby 15x30 feet, paneled ten feet high with marble. The ceiling of the lobby will be vaulted and ornamented with deeply coffered panels. The floors will be of tile. Considerable space in the building has already been leased, the Aetna Insurance Company having taken a corner on the ground floor. The original plans called for a ten-story building, but only five stories will be erected at this time. The steel work is heavy enough to carry the additional stories. The present structure is arranged for 100 offices.

Six Chapter Houses.

It has been announced by Mrs. P. A. Spaulding, Western Coast manager for the American Woman's League, that six chapter houses will be erected in and near Los Angeles, at a cost of $27,000, during the year 1910. The buildings will be located as follows: Los Angeles, $10,000; Pasadena, $7,300; Pomona, $5,000; Corning, $2,500; Big Pine, $1,200, and Compton, $1,200.

Los Angeles Chapter, A. I. A.

At the December meeting of the Southern California Chapter, A. I. A., it was authoritatively announced that the next convention of the American Institute of Architects would be held on the Pacific Coast.

The chief topic of discussion of general interest was that of school-house construction in Los Angeles. The local school board was represented by its president, Joseph Scott. City Superintendent of Schools E. C. Moore was also present. The advisability of the creation of a school architect to have charge of planning and construction of buildings was discussed and met with favor.

The Chapter has decided to raise the initiation fees after February 1st to $25 for regular membership and $10 for junior membership.

In addition to those noted last week, Messrs. Lyman Farwell and Homer W. Glidden were announced as having been elected to regular membership.

Other invited guests present were Architect John C. Pelton of San Francisco and M. A. Vinson.

San Francisco Chapter, A. I. A.

A special meeting of the San Francisco Chapter, American Institute of Architects, was held at Tait's Cafe on Thursday evening, December 16th, with an attendance of twenty-four.

Resolutions on the death of Mr. Robert H. White, as prepared by a special committee of three, were presented and a motion duly passed that the resolutions be engrossed and forwarded to the members of Mr. White's family.

Messrs. George Taylor Plowman and Albert Schroepfer, newly-elected members, made brief remarks.

A telegram from Mr. Cass Gilbert, president of the American Institute, was read, in which Mr. Gilbert advised the Chapter that the convention recently held at Washington, D. C., had unanimously voted to hold the next convention on the Pacific Coast.

San Francisco Chapter Wants to Co-operate.

The San Francisco Chapter of the American Institute of Architects has tendered its assistance to the Merchants' Association in the work of inspecting public improvements under the bond issue. Its president, Mr. William Mooser, writes:

"The Merchants' Association of San Francisco:

"Gentlemen: — The San Francisco Chapter of American Institute of Architects desires to offer its services to your association in any matters in which you may think our advice will be of value. A representative of yours, Mr. D. A. Hagens, called today regarding this matter and he was informed that the Chapter had in view the same subject; hence this letter. We shall be glad at any time to co-operate with your association for the good of all.

"Very truly yours,

"WILLIAM MOOSER, Pres."

The secretary of the association has sent a reply conveying the thanks of the organization.

Two Competitions Decided.

Two important competitions have been decided the past month. The Solano County courthouse at Fairfield, Cal., will be designed by Architects E. C. Hemmings of Sacramento and Wm. A. Jones of Vallejo, while the new $90,000 First Methodist Church in San Francisco will be designed by Architects McCall and Wythe of Oakland. The church plans call for a handsome Gothic edifice 137½ feet square, having a complete steel frame, reinforced concrete foundation and walls the latter faced with Colusa stone, a large vaulted corridor, asbestos slate roof, concrete floor in the auditorium, covered with Oregon pine, interior wood finish of oak, partitions of terra cotta tile plastered. The main auditorium will have a seating capacity of 1,200 persons with gallery on two sides, choir loft and organ in the rear. Adjoining the auditorium will be the Sunday-school and class rooms, which connect by sliding doors. These may be opened in the auditorium, giving a total seating capacity of 2,000. In the basement will be a high-class heating and ventilating plant, gymnasium, baths, reading room, etc. Adjoining the church a parsonage will be erected which is included in the $90,000 estimate.

Returns From Abroad.

Charles Sumner Greene of the architectural firm of Greene & Greene, Pasadena, has returned from an extended tour of England and the Continent. Mr. Greene was away for eight months, during which time he visited all the important architectural centers of the old country. He was much impressed with the beauty of the old classic and Gothic work, and gathered many new ideas from his trip.

Honor for Architect Wright.

G. Alexander Wright, of the firm of Wright, Rushforth & Cahill, architects, has been elected an honorary member of the Quantity Surveyors' Association of London, England. Mr. Wright was a guest of this society at its annual meeting and banquet last year and spoke upon the progress made in the reconstruction of San Francisco. Mr. Wright is the first honorary member of the association.

W. H. Crocker's New Mansion.

William H. Crocker's new $500,000 mansion in exclusive Burlingame is practically completed, after being more than four years in the course of construction. It is a thing of architectural beauty, and from the distance looks like a public library, with its massive pillars of marble.

The new Crocker home is a wooden structure of fifty rooms and consists of two stories, an attic and a cellar. The exterior of the house is of cement plaster on metal lath. Ten marble pillars stand at the entrance.

A feature of the mansion is the elaborate fire-protection system installed. Throughout the place is hose on a system of revolving iron balls, bearing a resemblance to huge cannon shots.

Eight Drinking Fountains.

Architects Hunt, Eager & Burns, of Los Angeles, have prepared plans for eight artificial stone drinking fountains to be erected in the public playgrounds in that city. Each will be built on a concrete slab 8x10 feet and six inches thick. The fountain portion will be of imitation granite, three feet high and three feet eight inches square at the base. Drinking cups will be placed at each of the four corners and the central portion will be reserved for a flower box.

Want Separate Contracts.

The Association of Master Plumbers of San Francisco, Inc., with offices at Page and Gough streets, have sent out the following notice:

"Resolved, That after February 1st, 1910, we will not estimate for, nor accept a job of any kind from a general contractor as a sub-contract. We will estimate only for architects or owners, and all contracts or jobs must be let or given direct to the plumber."

New Officers of Washington Chapter.

At a recent meeting of the Washington Chapter, American Institute of Architects, held at Seattle, Wash., the following officers were elected: President, David J. Myers; secretary, W. R. B. Wilcox; treasurer, C. R. Alden. The subject of civic improvements as applied to Seattle was discussed at this meeting, and the relative value of two separate plans as proposed by the Commercial Club and the Civic League were canvassed.

Architect Henry H. Meyers.

Henry H. Meyers, architect, has sent out cards announcing the dissolution of the firm of Meyers & Ward, informing his friends and clients that he will continue his architectural practice, with offices in the Kohl building, San Francisco.

Bakersfield Courthouse Competition.

It is a long time since a competition has attracted so much talent as the one recently held at Bakersfield for a courthouse. Plans were submitted by twenty-three well-known architects. Practically all the designs called for classic structures with a prominent dome in the center and two imposing wings. The estimated cost of the building is $400,000. The following architects submitted plans:

Frederick H. Meyer, Cummings & Weymouth, T. R. Griffith, William J. Bleisner, Morganeier & Burke, Havens & Toepke, W. D. Shea, Train & Williams, Lionel Deane, G. A. Lansburgh, Joseph W. Rowell, Thomas Smith, J. Walter Dolliver, W. J. Cuthbertson, Glenn Allen, O'Brien & Werner, Sutton & Weeks, Robert H. Orr, Henry C. Smith, Charles C. Frye, Cole & Lampe, Parker & Kenyon, E. J. Weston.

At a meeting of the Supervisors, held January 5th, the plans of Frederick H. Meyer of San Francisco, who designed the Humboldt Bank and Monadnock buildings in that city, were accepted. G. A. Langsburg received $500 and O'Brien & Werner $250, both San Francisco firms, as second and third prizes in the competition.

Annual Meeting of San Francisco Architectural Club.

The annual meeting of the San Francisco Architectural Club was held January 5. Officers were elected, as follows: President, August G. Headman; vice-president, Louis C. Mullgardt; secretary and treasurer, T. Bearwald; directors, Frederick H. Meyer and A. L. Lapachet.

The report of the secretary showed a total membership of 114, consisting of 90 regular, 19 associate, and five honorary members. During the past year, 46 regular, seven associate and two honorary members were elected, three members were reinstated and 19 dropped by resignation and leave of absence, making a net gain of members for the year of 39.

In addition to the appointment of committees, the following important business was transacted during the year: The affiliation of the Club with the Architectural League of the Pacific Coast, the holding of the Fifth Exhibition of the Club, and in connection with the exhibition, the First Annual Convention of the Architectural League of the Pacific Coast. The last evening of the Convention was taken up by the annual banquet of the Club. Among those present were Mr. Cass Gilbert, President of the American Institute of Architects, and Mr. Irving K. Pond, Second Vice-President, both of whom were elected to honorary membership in the Club.

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OFFICES
621 Monadnock Building - San Francisco
Telephone Douglas 1828
Builders' Exchange, Oakland
Room 234—142 Broadway, Los Angeles
406 Lumberman's Bldg., Portland, Or.

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THE LAST SPIKE ON THE WESTERN PACIFIC

There is now a new link between the Land of the Mormon and the Land of the Native Son, for on November 1st, at Spanish Creek Bridge, 73 miles east of Oroville, Cal., the last spike on the Western Pacific Railway was driven. There was no celebration, no elaborate ceremonies, nor long-winded speeches. The party present consisted of the construction gang of Indians and Italians and the only oration delivered was by the construction foreman. The final spike was of steel and it was driven in to stay by a husky section hand. Started on October 20, 1900, as a Gould project, the line is generally believed to have come under the control of Harriman and on his death to have passed under the domination of James J. Hill. The road extends from Salt Lake, Utah, to Oakland, Cal., and its building involved many engineering feats and the overcoming of many construction difficulties. From Salt Lake City the line runs to the Humboldt River around the southern end of Great Salt Lake and the northern end of the Stansbury range, thence crossing Low Pass in the Cedar range, it strikes the Great Mud desert, across which it runs for 38 miles. It then climbs the rim of Salt Lake basin, crossing it at Silver Zone Pass, at an elevation of 5,875 feet. From there the line descends into Gosiute Valley, in the bottom of which it crosses the Nevada Northern Railroad. It then ascends the Pequod range, crossing it at Flower Lake Pass at an elevation of 5,907 feet, this being the highest point reached on the road. It then descends into the Independent Valley, and goes to the Humboldt River at Wells Station. From Wells to Winnemucca the general course of the Humboldt River is followed. From Winnemucca the line goes nearly west to the southern point of Honey Lake, then turns southward and climbs the Sierras, crossing at Beckwith Pass. From this pass the line follows the various forks of the Feather River to Oro-

ville. The railroad proper stops at the Oakland water front.

SAN FRANCISCO'S REMARKABLE BUILDING RECORD

San Francisco's building operations for the year 1909 show total contracts entered into of $30,411,196. Adding these figures to the previous record shows that since the fire, which destroyed 28,000 buildings, there have been issued 24,278 building permits for a total of $152,994,309. The total amount of building contracts entered into since the fire is $150,116,976. As nearly all the buildings erected have cost much more than 10 per cent over the original contract price, it is estimated that the total value of the structures erected since the fire amount to not less than $165,000,000. This is without doubt an extremely conservative estimate, for it is believed that the total amount of money spent for building operations since the fire is not less than $200,000,000. When it is remembered that of this immense total there was borrowed in New York only $10,820,500 and the balance of $154,180,000 was loaned by local banks and raised in various ways locally, the strength of the city financially must be as apparent to outsiders as it has been cause for congratulations at home.

FIRE PREVENTION

One of the most effective measures yet devised in the direction of fire-prevention is the labelling of buildings that is suggested by Architect Fitzpatrick of Washington, D. C., in the "Popular Science Monthly." Says that expert:

"It is immediately necessary that the authorities should conspicuously label every building of public or semi-public nature, just as to its class of construction, 'fire-proof,' 'ordinary,' 'dangerous.' As it is now, the term fire-proof is cruelly abused. It is applied where there is not the slightest foundation for its use and is made the means of obtaining tenants and occupants under false pretenses. A man with 'dangerous' affixed to his building would have difficulty in renting it and that would be a powerful incentive to him to at least make the building better if he did not absolutely eliminate it and build correctly. Then we should have the same municipal regulations that they have in most European cities relating to 'neighboring liability.' Here we have a selfish way of taking care of ourselves and letting the other man shift. There, they make you responsible for any damage to your neighbors' premises or property that may result from a fire in your premises caused by your or your agents' negligence or carelessness. It makes people wondrously careful in handling their ashes, waste paper, etc. There neighboring damages are always collectible at law in Europe, and the regulation is one of the most effective of fire-preventative measures."

Franklin P. Burnham.

Franklin P. Burnham, architect, whose work in Southern California won him a reputation for clever handling of the classical orders, died suddenly December 16, 1909, falling unconscious to the floor in the First National Bank, Los Angeles, while conversing with one of the tellers. Mr. Burnham had visited a sick friend at the hospital during the morning and seemed to have been much affected by this visit, which it was thought might have brought on the fatal attack.

Mr. Burnham's work as an architect is to be seen in many of the prominent buildings in Los Angeles and other cities in the southern part of the state. The Polytechnic High School, Christian Science Temple, Pasadena; Riverside Courthouse and Carnegie Library, numerous schools, libraries and Masonic temples are testimonies of his ability. At the time of his death he had completed plans for the San Diego Masonic Temple and for additional buildings to the Polytechnic school. He was also architect for the ten-story American National Bank building at San Diego, which is now under construction.

Previous to coming to Los Angeles he resided in Chicago, where he designed several prominent buildings, the state capital building in Atlanta, Ga., and the Tabor Grand Opera House in Denver.

Mr. Burnham was born in Rockford, Ill., in 1853. He leaves a widow, son and daughter.

HEATING AND LIGHTING

A Hot-Air Furnace in a House Without a Cellar.

By R. S. Thompson.

SOME time since I was asked if I could put a furnace in a house where there was no cellar, and where, on account of local conditions, a cellar was impossible.

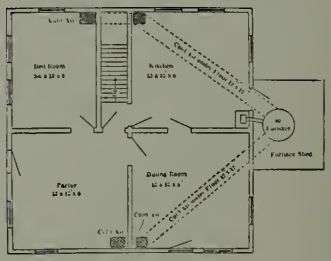
I replied that it could be done, and I submit herewith a sketch showing how it was done.

The house had six rooms, four in first story and two in second, the rear being only one story high.

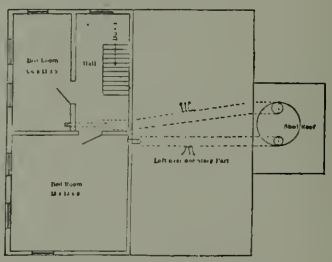
I had the owner build a small shed room in the rear, so that it extended across both the back rooms, or rather part of each room, as shown in the first floor plan. In this the furnace was set opposite the central partition, so that one-half the furnace was back of each room.

A rectangular pipe 12 inches by 14 inches, made of galvanized iron, was placed under the ceiling of the rear room, against the inside wall, and carried through the wall into the furnace room over furnace, with which it was connected by a 14-inch upright round pipe.

A register in the side of this rectangular pipe, as shown in the elevation, heated the room through which it passed. Close to the ceiling in the front rooms

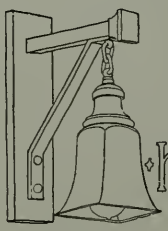


First Floor Plan



Second Floor Plan

wall registers were connected with the end of the rectangular pipe. An 8-inch round pipe was tapped into the top of



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the rectangular pipe near the front of the room, carried through the loft and into register in wall of front upper room above baseboard, as shown.

The two lower and the upper room on the other end of the house were handled in practically the same manner. There were thus two 14-inch pipes taken off top of furnace to heat these six rooms, the two having an aggregate area but little greater than that of six 8-inch pipes. But I have found that one 14-inch pipe will carry more air than three 9-inch pipes, and a pipe rising perpendicularly off the top of a furnace will carry much more air than a horizontal one.

Of course, this put an exposed square pipe in each of the back rooms, but as it was against ceiling and wall it could easily be encased, and did not materially mar the appearance of the rooms.

The elevation and plan was originally laid out as shown for return ducts under the floor, connected with cold air registers in the four lower rooms and with the furnace. Owing to some changes in plan, these have never been put in, and as the system is working to the delight of the owner, it is probable they will not be, though it is certain they would greatly improve the working of the system.

This particular job was a makeshift,

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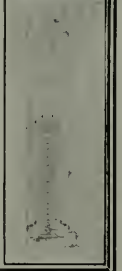

adapted to existing conditions, and put in an old house which would not warrant expensive changes in the building; but anyone can see how easily this could be adapted to other houses, if the plan were worked out before the frame was up, especially to the ordinary eight-room square house.

Residence Heating by Hot Water System.

Not so much can be said about the failures in hot water and steam systems, because, as a rule, they are planned with greater care and by men better qualified to do the work. However, of all the difficulties experienced in both systems, by far the greater part can be charged to the hot water work. This is to be expected when one remembers how very small is the motive force causing circulation in the water and how easily this may be counteracted by small pipes, many short turns or improper laying.

Short cut rules for proportioning radiation are, also, in too frequent use even by those well grounded in the subject, and from whom could be demanded a more rational course.

The architect is responsible for the location and capacity of the chimney, and, in a degree, for the location of the heater or boiler, for, as he plans the basement, the heating apparatus may be located to suit. Many chimneys are poorly located and are of improper size, and when the heater or boiler does not fire well the responsibility of the architect in the matter is seldom thought of, and the censure is placed upon the shoulders of the man who installed the heating apparatus.

This feature of the work is where the heating engineer can do some missionary work in the line of architectural design. The other points mentioned are directly chargeable to the man who designs the heating system, and there is little excuse for his mistakes.

All should know that the surface of mains and branches should be counted as radiation surface, and that the efficiency of the heater or boiler is somewhat reduced after having been in service for a time. Because of this latter point, a selection would be made having a capacity about 25 per cent greater than the total radiation found. When such a generator is properly set, all pipes in the system will have a satisfactory fall, the minimum height or circuit will be sufficient to cause a good circulation, and the pipes will be so proportioned as to avoid short circuiting or water hammer.

Too small mains on a steam system have a tendency to force the water on the return end back into the radiators, thus killing the flow of the water and

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steam, also bringing the water line of the boiler too near the level of the lowest radiation; radiation too small and improperly placed.

The final word of caution that this paper wishes to extend may be paraphrased in the following: "The engineer attacking any important problem should first become thoroughly familiar with the principles involved in its solution, and should afterwards check his results wherever possible."—Heating and Ventilating Magazine.

Points About Heating Plants.

IT IS fast becoming a fact that the correct furnace job is the exception rather than the rule, and some remedy should be applied very soon. The fault is not in the system. Furnace heating, if properly installed, is healthful, cheap and scientific. Neither can it be said that the fault all rests with the manufacturer. The purchaser is to a certain degree to blame, in that he is willing to let the contract go to anyone who cuts to the lowest price regardless of the quality of the man who takes the contract or of the apparatus which he represents. Another frequent source of annoyance and error is the relation of the heating expert or contractor to the architect. To be just to both, the system of heat should be first selected and allowances made in the plans for its installation. Some of the chief points to be considered are: First, the size and location of the chimney; the running of the cellar partition walls to accommodate the location of the furnace and the coal bin; the height of the basement ceiling to allow sufficient inclination of the leader pipes; the construction of the partition walls between the rooms to allow for riser pipes of sufficient size to heat large upstair rooms; the planning of the walls to avoid horizontal runs of heat ducts in the second floor to reach a room otherwise inaccessible; and other points not necessary to mention.

All heating engineers know that the range of location of a furnace relative to the house plan is very limited, and that in many cases it is an absolute necessity, after the house plan is completed, to set the furnace out of this desired location, thus compromising the efficiency of the system; also, that the basement ceiling in many cases is so low that the leaders require to be run nearly horizontal, thus reducing the draft in them; also, that a 6-inch studded wall in many cases could easily have been substituted for the 4-inch, with little additional cost, and have improved the system immensely; also, that certain walls absolutely prohibit the running of stacks to the desired spot in the room, and that, with a slight change, this could have been arranged without in any way injuring the architect's plans. Such, in brief, are some of the troubles that the conscientious heating engineer or contractor faces when he proposes to do his work after the building plans have received the O. K. of the architect.

Finally, however, the purchaser himself occasionally offers objections to the proper design of the system because of the desire to economize, although false economy it may prove to be in the end. Occasionally one hears the advice,

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"Don't heat the chamber rooms on the second floor very warm, because I like a cold sleeping room." Advice which, if heeded, would be good nine times in ten, but the tenth time when it is needed, it is needed badly, and the system and the man who installed it are both censured. How much better to have made the job right at first and permit the owner to regulate the damper to suit his needs, even to closing it entirely.

Good advice to all men installing residence heating systems is, "Heat every room as though it were to be used as a living room, and let the owner regulate to suit his needs."

Sham Concrete Piles.

The State Board of Harbor Commissioners have discovered that a number of the "reinforced concrete" pillars, supposed to support Pier No. 9 along the San Francisco water front, are not of concrete at all but are wooden cylinders capped by a disk of concrete which gives the appearance of a solid concrete pile. The wharf was built in 1902 by the Hyde Construction Company on its bid of $73,770 which, at the time, was declared to be far below actual cost. Lott D. Norton was chief engineer of the board, which at that time was made up of Paris Kilburn, president; Rudolph Herold, Jr., and John C. Kirkpatrick.

Norton supervised the construction and W. J. Guilfoyle was appointed state inspector. It was Guilfoyle's duty to be on the job all the time and to certify to each part of the work as it was done. The wharf was 820 feet long and 124 feet wide. It was to have Holmes' patent cylinders as a base and an asphalt floor.

According to the specifications, these cylinders were to be pumped out before being filled with concrete. Provision was made for the proper reinforcement of the concrete with expanded metal and the methods of mixing and placing the concrete were specified.

From what was discovered it would appear that the only part of the cylinder which was built according to specifications was the cap. A number of these caps are now hanging to the stringers, all signs of the cylinder that was once below having faded away. Experts who

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have seen these caps say that some of them were built on the wooden cover, which was placed over a probably empty cylinder. In other cases there is evidence to show that the cylinder was filled with odds and ends of scrap and rubbish until it was choked sufficiently to support concrete, with which the balance of the cylinder was filled. Some of the defective cylinders are solid concrete from the cap down to the water line. Some are good for a foot or so below the water line.

The Construction Club.

Walter E. Dennison of the Steiger Terra Cotta & Pottery Works, is president of the newly organized Construction Club of San Francisco. W. B. Webster, of W. W. Montague & Co., is its vice-president; J. D. Osborne, of the Judson Manufacturing Company, is treasurer; H. W. Postlethwaite, of the Holmes Lime Company, is a trustee, and A. F. Power is secretary with headquarters in the Sachs building at 140 Geary street.

Walter N. Kelly, of the Meese & Gottfried Company; John H. Hendy, of the Joshua Hendy Iron Works, and P. H. Reardon, of the Compressed Air Machinery Company, are on the Building Committee.

The club is located in the very heart of the hotel and banking districts. The dining hall is to be in the form of an inclosed roof garden, composed of a large banquet room and private dining rooms. There will be a library of technical literature pertaining to the interests represented, a lounging room, billiard room and committee and conference rooms. Some of the most talented men in the profession have volunteered their services to bring out artistic and unusual effects in the decorative arrangement of the club rooms.

The club is to be headquarters for out-of-town buyers and daily reports will be made of trade arrivals in the city.

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To Better Electrical Contracting Business.

W. S. HANBRIDGE, whose likeness appears above, is the newly-elected president of the California Association of Electrical Contractors, which has undertaken the praiseworthy task of bettering present conditions in the electrical contracting business throughout the State of California. With practically all the leading electrical contractors as members, the association is more than likely to accomplish the end sought. Mr. Hanbridge is enthusiastic, and if he puts the same ginger into the organization as he instills in his business, the association is bound to be a success.

"Our main purpose," said Mr. Hanbridge, "is to promote a better feeling among the electrical contractors of the state, to foster and encourage district locals, that is to say, a local organization for each city and town (same to be affiliated with the state organization), and to take up a vigorous crusade or, rather, campaign of education among the architects.

"The electrical contracting business, in San Francisco at least, has been in a demoralized condition for some time, due largely to the present unsatisfactory cus-

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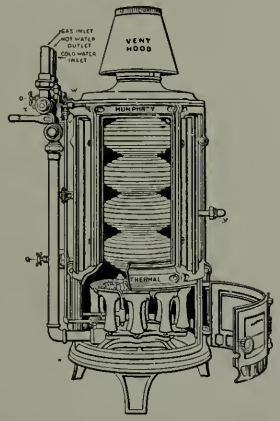
tom of making a bid on a job for the benefit of the general contractor. He takes the electrical man's figure and then, after he has landed the job, instead of giving the work to the man from whom he sought the figure, he gets somebody else to do it—possibly for less money. That is not honorable and the contractor and architect know it. We are going to work for a standard set of specifications and members of the association will be asked to pledge themselves to refuse to figure on a job unless assured that the bid is bona fide and that in the event that the general contractor gets the work he will give the electrical house bidding on the same their part of the contract."

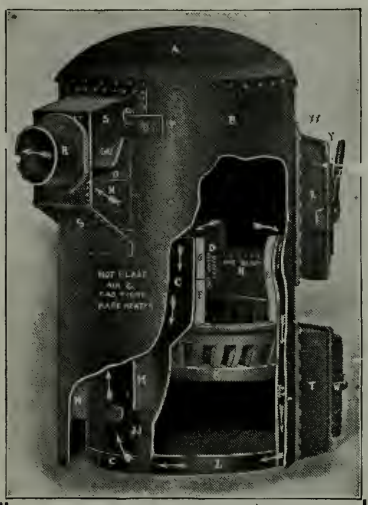
Hot Water at a Low Price.

If you are willing to strike a match, light the pilot and turn on the gas and water together, you can have hot water instantly (seven seconds) and get it as long as you leave the gas and water on, at 1-10c a gallon—is one of the strong



claims made by the Humphrey Company of Kalamazoo, Mich., for their Humphrey Instantaneous Water Heaters.

Any danger of explosion is declared impossible because of these heaters being fitted with an improved safety gas



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The burner consists of a group of several scientifically constructed bunsen burners, which burn the gas perfectly and in a very hot flame. Access to them at any time for cleaning or adjustment is permitted by a door to the burner chamber, which is removable by taking out three small screws. This does away with disconnecting the entire heater, should it ever be necessary to clean the burner.

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By the Way

Some Industrial Information Worth the While

An Argument for Inspection.

The recent wreck of the Owl passenger train on the Southern Pacific road near Niles, due to a defective rail, calls attention to the necessity for inspection not only of steel rails but structural steel, concrete, and all kinds of building materials. That there are many buildings in San Francisco in a more or less dangerous contion, due to inferior building materials, which have not passed inspection, is admitted by competent architects and engineers. Proper inspection is the only positive safeguard against inferior and defective work.

A San Francisco firm that is paying special attention to inspection work is Smith, Emery & Co., of 651 Howard street. The business of this house is by no means local, as they are represented in Seattle, Los Angeles, San Diego, Pittsburg, New York and Chicago. Recently an office has been opened at Birmingham, Ala.; another at Pueblo, Colo., and another at Montreal. Mr. M. L. Kulp, formerly of St. Louis, will have charge of the Pueblo office. The firm has been fortunate in securing the services of Mr. W. F. Richards, of Philadelphia, and one of the best-known steel inspectors in the United States, to take charge of the steel inspection department at San Francisco.

Smith, Emery & Co. occupy their own building, a splendid two-story and basement structure, built immediately after the fire. The physical laboratories are fully equipped with modern machinery and appliances for the testing of all classes of constructing materials. Facilities have also been provided for conducting experiments of the most extended character. The cement testing rooms are equipped with all modern paraphernalia, including an electric thermostate, and have a capacity of 10,000 briquettes.

The Gas Generating Oil Burner.

It is an acknowledged fact that the use of crude oil and its product—distillate—has revolutionized the heating industry, and has enabled the manufacturer who uses low power steam boilers to increase the efficiency of his plant, and to reduce the cost of fuel fully one-half. There has been much experimental work during the past five years by heating experts, and considerable has been accomplished in securing results. One system that has stood the test of time and has given satisfaction to the users is the Lindley Oil Burner, which has been in use in Los Angeles and vicinity for two years.

The Lindley Company has recently established an agency in Oakland, at 727 San Pablo avenue, Messrs. Long & Long being the exclusive agents for the northern territory.

The agents claim, and are prepared to demonstrate the fact, that the Lindley Oil Burner is practically smokeless and

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sootless; that it can be regulated perfectly; that it is absolutely free from danger of explosion; that it is odorless; that it is more efficient and more reliable than any other oil burner on the market.

It is a fact that the kitchen range, used for demonstrative purposes, burns twelve hours each day at a cost for distillate of 20 cents for 12 hours.

For hot-air furnaces, hot-water boilers and low-pressure boilers, it is equally efficient and economical.

In the fall of 1908 it was installed in the Bank of Pomona, replacing a coal-burning heating system, and the bank officials recently stated that the reduction in cost of fuel, with the Lindley Oil Burner, was 45 per cent, while the increase in comfort and in cleanliness could not be calculated and expressed in figures.

The Cass-Smurr-Dameral Hardware Company, the largest wholesale and retail dealers in stoves and heating apparatus in Los Angeles, handles and indorses the Lindley Oil Burner, and has installed it in hundreds of the residences and hotels of the Southern City.

The Lindley Oil Burner has been installed in a 12 H. P. boiler carrying 70 lbs. pressure at the City Hall Laundry, 873 San Pablo avenue, Oakland; also at the Caledonia Dye Works, San Pablo avenue, where 60 lbs. pressure is used. In each place, the proprietors express themselves as well pleased with the new system.

Experts in Concrete Construction.

Peterson, Nelson & Co., experts in concrete construction, are doing the concrete work on two important buildings under construction in San Jose. The foundation work for the First National Bank building, a nine-story class "A" structure being erected from plans by Architect L. B. Dutton of San Francisco, were put in by this firm and they did a splendid job, too, according to the superintendent of construction. The same firm is doing all the concrete work on the new Pacific States Telephone building, a four-story class "A" building, under construction on Market street, San Jose. Their contract includes the laying of the concrete floors in addition to the foundations. Mr. Nelson is spending a greater part of his time in the Garden City, personally superintending the work. Mr. Peterson is looking after the San Francisco work, of which there is quite a little. One of the firm's best contracts in San Francisco was the Crane warehouse, on Brannan street, which will be illustrated and described in a future number of this magazine. They also did the concrete work on the Calkins Syndicate building, the Parrott Estate building, Home Telephone building and grain warehouse on Brannon street. The general offices of Peterson, Nelson & Co. are at 407 Pine street, San Francisco.

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Store Building, Berkeley *J. G. Howard, Architect*

Yager Sheet Metal Works to Have Larger Quarters.

A steady increase in business has compelled the Yager Sheet Metal Works of 1006 Seventh street, Oakland, to cast about for larger quarters. Mr. Yager has a desirable location in view and hopes to move within a short time. During the past two or three years this firm has completed some of the most important work in the sheet metal line undertaken in the Trans-bay cities. Architects and contractors like to deal with Mr. Yager because his work is done well and there are no delays.

One of the best of the more recent jobs of galvanized iron completed by the Yager Works is on the Central Bank building at Fourteenth and Broadway, Oakland, and the one-story store building at the corner of University and Shattuck avenues, Berkeley, designed by Architect John G. Howard. The galvanized iron cornice and balustrade and the copper front were put up by Mr. Yager. A photograph of the building is shown herewith.

McWhirter & Drake.

These well-known masonry contractors have enjoyed an exceptionally good year from a business standpoint and 1910 promises to be equally busy for them. Their work has been high class in every instance. They are members of the San Francisco Builders' Exchange, 188 Jessie street, and may be found there during the noon hour each day or a letter addressed to 1329 H street will reach them. They are prepared to give estimates promptly on all kinds of masonry work.

Asbestos Protected Metal.

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Builds Fine Homes.

Louis J. Larson, the well-known Oakland contractor and builder, was the contractor of the handsome residence, an interior of which is shown in the advertisement of E. A. Howard & Co. in this issue of the Architect and Engineer. A. W. Smith of Oakland is the architect.

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New Building Ordinances for Los Angeles.

THE building ordinances of the city of Los Angeles have been redrafted. One of the chief changes made is the rearrangement of the existing ordinances, the various regulations being put in better shape for comprehension by the layman.

Other changes have been made in regulations, however, which will have to be taken into account by the designer and builder. It had been recommended by the Chief Inspector of Buildings that a limit of height to four stories in other than class "A" structures for hotels, apartments and rooming houses, be incorporated in the new ordinance, but sufficient pressure was brought upon the council to have this changed to six stories.

The recodification was done with the advice of a committee of architects consisting of Octavius Morgan, J. P. Krempel and A. R. Kelly. The following synopsis, prepared by Chief Inspector of Buildings J. J. Backus, will give some general idea of the changes:

Section 2 has been changed to require the seal of the building department to be placed upon drawings showing they have been approved by said department. This is in line with the general practice in all large Eastern cities.

The sections relative to stairways in buildings of classes "B" and "C" have been changed to slightly increase the number of stairways required in a given area. These changes are made with a view of safeguarding occupants of buildings.

A section has been added providing for the erection of hollow tile buildings outside of the fire limits with six-inch walls, provided such buildings are not over one story in height. This was done with a view to giving the people an opportunity to obtain semi-fireproof buildings without going to the expense of regular masonry walls.

A section has been added requiring that all buildings erected hereafter to be used for hotels, apartment houses and rooming houses be constructed class "A" where the building exceeds six stories in height. This change, also, was made with a view to safeguarding the occupants.

The fire escape section has been changed requiring that where fire escape ladders cross windows that such windows shall be constructed of metal frames, sash and wire glass. This is to prevent fire from breaking through the windows and cutting off the means of escape from upper floors.

A new section has been added requiring that all hospitals hereafter erected, which are over one story in height, be of fireproof construction.

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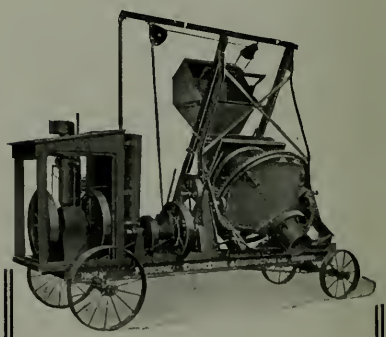

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A provision has been added to the ordinance requiring that in the erection of steel frame buildings there shall be constructed a temporary floor in order to safeguard the workmen erecting the steel work; said temporary floor to be on the second story below the point at which work is being carried on.

The ordinance herewith presented makes no change in the reinforced concrete section, nor in the sections governing existing theaters and moving picture houses.

In addition to the changes above noted, there are a great many throughout the ordinance, which are more or less of a minor character and chiefly consist of transpositions of sections and phrases to make them read more intelligently, the entire ordinance has been revised from a legal standpoint with a view to making it clearer and enabling the Board of Public Works to prosecute any one for violation of the ordinance.

Wide Concrete Bridge.

The City Commissioners of Hutchinson, Kansas, have decided to construct a single, reinforced concrete arch, with a 50-foot span, over Cow Creek, at the intersection of Main street and Avenue "A."

City Engineer McLane reports that it will be possible to span the creek with a single arch, and a rise of six or seven feet may be secured. The bridge will cover the creek for a distance of over 300 feet, with an area of approximately 16,000 square feet.

Engineer McLane will prepare plans which, after approval by the Commissioners, will be submitted to the contractors for bids, and City Attorney Tyler will prepare the necessary resolutions or ordinances so that work may be started in the spring.

This will be the first structure of the kind in the city, and the commissioners have, by their decision, fixed the policy of replacing the twelve or fifteen wooden bridges now spanning the creek with permanent bridges, when renewal is required.

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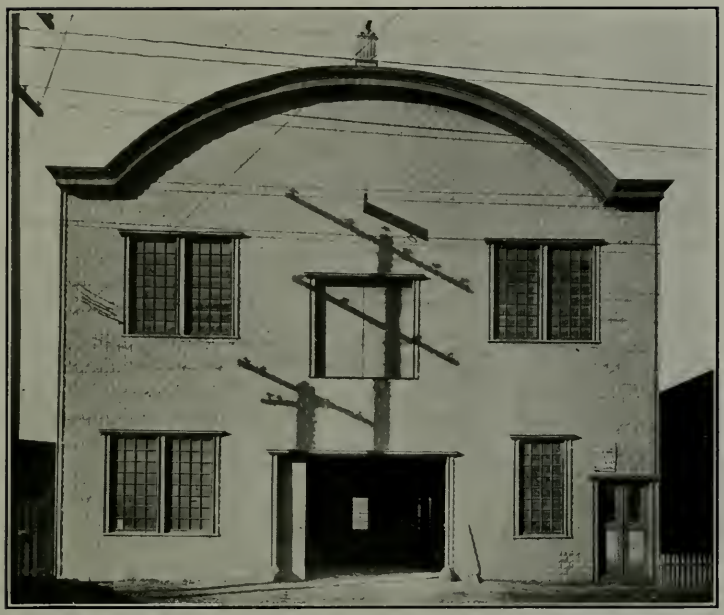

New Home of the San Francisco Metal Stamping and Corrugating Company.

Moves to Larger Quarters.

A constantly increasing business has compelled the San Francisco Metal Stamping and Corrugating Company to seek larger quarters and the company has been

Native Sons' Bear of Sheet Metal

fortunate in securing a satisfactory lease of the property at the corner of Nineteenth street and Treat avenue, opposite the Mission foundry, which will be the future home of the industry, the change of location from 296 Eleventh street, having been effected soon after the first of the new year. According to Manager Theophile La Haye, the old location was outgrown six times in two years, that is to say, the old place was added to and added to until there was no more space available. The company has been exceptionally successful in the manufacture of stamped and spun sheet metal ornaments, statue work and art metal ceilings.

The new factory is 50 by 100 feet and two stories. The ground floor is taken up with the stamping, spinning and metal drawing machinery, two new presses having been purchased, also the rolling machinery and drawing bench. Upstairs are the sample and store rooms and the offices of the company. The illustration of the Native Sons' bear, shown herewith, is an example of the company's work in sheet metal ornamentation. The bear would, indeed, make an appropriate decoration for each and every Native Sons' building erected in the Golden State.

New Branch Office.

Robert W. Hunt & Co., engineers, have established an office in Mexico City, at No. 20 San Francisco street, and Mr. Carl Holt Smith, for many years with the National Railways of Mexico, has been appointed Mexican and Central American representative of the firm.

Death of Mr. Paul Richter.

Mr. Paul Richter, president of the Richter Manufacturing Company, of Tenafly, N. J., died at his home in Tenafly on December 6th.

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Write or call for descriptive circulars and other data about these beds.

African Mahogany in the San Francisco Market.

White Brothers, the San Francisco hardwood lumber dealers, have shipped from their mill at Petaluma a large stock of the species of African mahogany known as Gaboon. The logs from which this lumber was manufactured were so large that White Brothers were enabled to saw up all clear lumber. Gaboon is a kind of mahogany which is little, if at all, known in this market. It is a little lighter in color than the Mexican or Honduras wood, but has the same grain with the exception that it is more highly figured. Practically all the boards have a wavy grain. Fink & Schindler, the interior fixture firm of San Francisco, have finished up some of this African mahogany or Gaboon and pronounce it excellent, especially for a lighter finish than ordinary mahogany.

An Enterprising Industry.

One of the newcomers in the building field in Alameda County is Cooper's Floor Company of Berkeley, which makes a specialty of hard-wood floors.

The firm also sells finish material, and carries a complete line of wax-filler, benzine, oil, weighted brushes and castors.

Mr. F. E. Cooper was employed in the hardwood floor business in Oakland for three years. Last October he established the present firm, of which he is the managing partner.

Cooper's Floor Company, though young in the field, has already taken more than fifty contracts, among which is the residence of Mr. P. E. Bowles, the banker. This residence was built by Kidder & McCullogh, and there are four thousand square feet of hardwood flooring in the house.

Change of Name and Address.

The Watson Roof Company, contractors for the preparation and application of "Watsonite" flooring, and felt and gravel roofers, have changed their name to Watson Floor and Roof Company, and are now located at 932 Folsom street, where a mixing plant is in course of construction. No change has been made in the personnel of the company.

Among the recent contracts for "Watsonite" flooring are: Anglo and London-Paris National Bank roof; Union Trust Company, new building roof; new almshouse, two connecting corridors; Mercantile Trust Company, roof to new addition; stable for Dr. Bricca; stable for W. & J. Sloane Company, stable of National Ice and Cold Storage Company.

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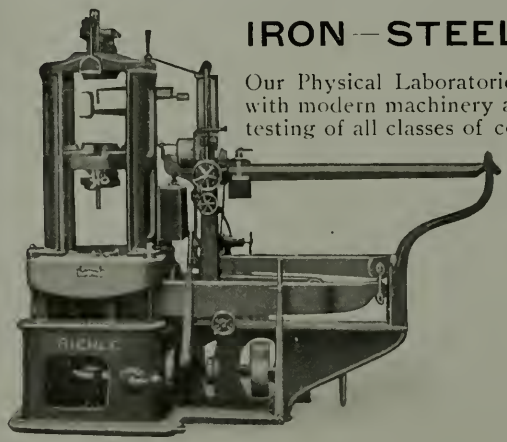

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Test of the Lindley Oil Burner.

One of the practical inventions of the 20th century is the adaptation of oil burners to the use of residences, as well as to manufacturing plants. There have been several burners invented, each of them more or less an advance over those that came before.

The Lindley Oil Burner, which has been on the market in Los Angeles for three years, seems to have attained pretty near the perfection point, and is in general use in the southern city. The company has recently established an agency in Oakland, Long & Long being the northern agents.

As proof of the practicability of their system, the report of Mr. John Wicks, inspector for the Home Telephone Company, in whose Oakland headquarters the Lindley Burner was recently installed is given herewith:

Test of boiler Home Telephone Company, old burner:

Time of test 3 hrs. 30 min.
Oil consumed, 102½ lbs.
Water evaporated, 669 lbs.
Number of sections of radiators, 120.
Steam pressure, 5 lbs. Feed water, 67° F.
Pounds of oil per hour=102½ /3½=29.3.
Pounds of water per hour=669 /3½=191.
Pounds of water per pound of oil=669 /102½=6.55.
Pounds of oil per section of radiator per hour=29.3 /120=.244.
B. T. U. per pound of oil=[1151—(57—32)]×6.55=7380.

Lindley Oil Burner:

Time of test 3 hours.
Oil consumed 71½ lbs.
Water evaporated 715 lbs.
Number of sections of radiators 131.
Steam pressure 5 lbs. Feed water 67° F.
Pounds of oil per hour=71½ /3=23.8.
Pounds of water per hour=715 /3=238.
Pounds of water per pound of oil=238 /23.8=10.
Pounds of oil per section of radiator=23.8 /131=.181.
B. T. U. per pound of oil=[1151—(57—32)]×10=11260.

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WALL BEDS

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1154 PHELAN BLDG., SAN FRANCISCO, CAL. Phone Douglas 348

Some High-Class Modeling.

Among the busy firms of San Francisco is S. Tomasello & Co., architectural modelers. Mr. Tomasello has been following his business in San Francisco for eleven years. He has recently taken into partnership Messrs. B. Benson and H. Stephl, young artists who bring to the firm the energy and enthusiasm of youth, together with a thorough training in the modern school.

Recent work done by this firm includes all the modelling for bronze work in the San Francisco National Bank building and the London-Paris National Bank, the metal work for both the above being furnished by the Rudgear-Merle Company. The firm is now modelling patterns for the chandeliers in the London-Paris Bank from designs by Adams & Hollopeter.

S. Tomasello & Co. execute cement and plaster work of every description; make scale models of architects' ideas; model and execute bronze tablets, and make models and patterns for all kinds of metal work.

The entire modelling for the Orpheum marquese, the renaissance panels for the Emma Rose building, and the antique frieze and the Louis XVI panels in the Crocker residence, at Burlingame, and the models for the bronze work in the Rosenthal store on Post street, were executed by Tomasello & Co., and are winning them encomiums from the lovers of art.

Open San Francisco Office.

Parker, Preston & Co., Inc., of Norwich, Conn., have opened permanent Pacific Coast offices in the Monadnock building, San Francisco, with Mr. E. H. Olney in charge. This office is in addition to the Los Angeles branch, which latter has been maintained for some time in the Central building.

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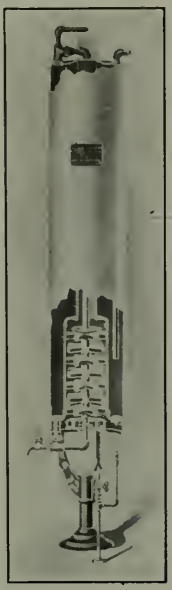

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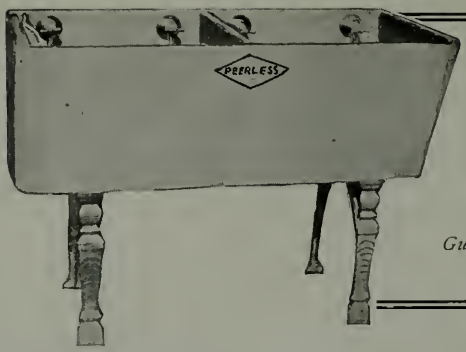

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The holder, which is made from ¾" octagon tool steel, while comparatively light and easy to carry, is still solid and substantial enough to admit of taking a firm hold and striking a heavy blow, neither of which is possible with the ordinary unnecessarily long brick or stone drill—without danger of breakage. The Star special drills, which are made in ¼, 9-32, 5-16, 13-32, ⅜, 7-16, ½ and ¾ inch diameters, are all made with a taper shank, which fits the taper bore of the holder. After a drill has been used in the holder it naturally becomes rather firmly set in the socket, but it may very readily be started by driving through the keyhole a taper key, which is furnished with the tool. The danger of breakage, so common in the use of ordinary brick or stone drills—particularly in the cases of the smaller diameters—is absolutely guaranteed against by the Star special drills as used with Star drill holders.

Another disadvantage of the old style full length drills is that after they have been used for a short time the drill heads or blanks become battered down to an uneven and a sometimes rounded surface, which, if not rendering the drill point itself absolutely useless, certainly makes it a very difficult matter to drill even, clean-cut holes. To the man who has been in the habit of carrying around in his kit his various diameters of drills, all in full 12" lengths, this tool is certain to appeal, as the outfit complete is carried very handily and without any inconvenience in the hip pocket.

Our readers are invited to address the manufacturer direct for prices and further particulars—also catalogue which is completely descriptive of their line of expansion bolts, lead anchors, toggle bolts, cable hangers and enameled bridle rings.

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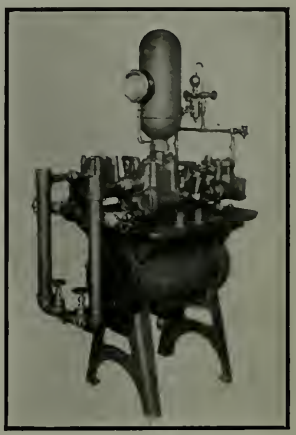

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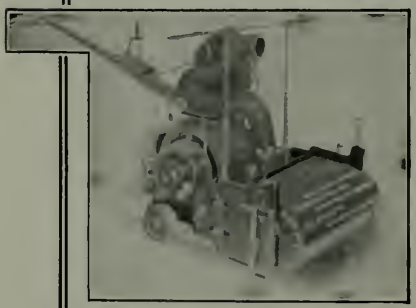

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When a new product, a new construction of any nature is manufactured and placed on the market, its sole right to general adoption consists of its being better than the article it replaces. Its success is determined by the exact amount of improvement it shows over the old methods of construction. For this reason alone Kawneer System of glass setting has met with universal favor by architects, contractors, owners and tenants.

The architect sees the general architectural beauty of the construction, the 12 inches of store front satisfaction and narrowness of the setting that gives greatest glass width and yet has the

requisite strength. The contractor sees the ease of installation, all glass being set from the outside and all pieces cut and mitered at the factory. The owner sees a front of the most modern type, architecturally beautiful, which means more rent. The tenant sees the all glass effect, the provision for ventilation and drainage and he knows it means a better window display, better advertising and more sales.

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Unique Residence

One of the unique residences of Southern California is the Pompeiian house in the Palisades of Santa Monica belonging to Felix Peano, says the Outlook. The house, which is of concrete plaster exterior, is of a kind heretofore unknown in the Southland. The front door is in the center and is approached by a circular walk of concrete. The curb of this walk shows the handiwork of Mr. Peano, artist, worker in bronze, painter and modeler of antiques. At one place a dog has been fashioned in the concrete. He is leading an attack upon a cat, which is seen with uplifted back standing on the curb's side ready to strike. The apex of the raised back of the feline, upon closer examination, is found to have been utilized and stands firm and erect as a foot scraper for the guest who seeks entrance into the mansion. The front door is ornamented with a circular plate glass, and he who nears the entrance is treated to a view of the interior of the building.

In direct line with this opening is the little octagonal court which is designed as a dining room. It is uncovered, and the walls are ornamented with bronze figures that might cause persons who are not familiar with nature unadorned in art productions to blush. There is a great reception hall, ornamented with sea shells permanently embedded in the walls. Behind these are the electric lights. The fireplace has no chimney, the smoke being syphoned through a pipe in the floor. The ceiling of the reception hall is of two stories in height and glitters in bronze, antique and unique conceptions. A stairway leads to a balcony and this opens onto the roof, where there are built-in beds for the accommodation of guests.

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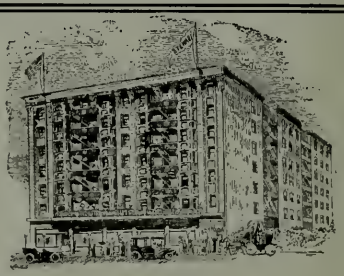

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Bluxome & Company, Concrete Contractors

The above is a snapshot of Bluxome & Company's crew of concrete workers that was employed in the reconstruction of the Fairmont Hotel. These men are all well equipped in their line—Mr. Bluxome employs only thoroughly competent help —and the fact that there have been many favorable comments of the Fairmont job is good evidence of the ability of this company to make good.

The Fairmont was one of the first contracts taken by Mr. Bluxome after the fire. He personally supervised the work and he is naturally proud of the results. The walls were fairly reeking with dampness when he commenced operations. Mr. Bluxome applied his own dampproofing compound, and as a result the walls are now entirely free from moisture and as dry almost as tinder.

On all large jobs like the Fairmont, Mr. Bluxome uses the Ransome concrete mixer, which he considers the best in the market for quick and thorough work.

Another creditable piece of work done by the Bluxome Company was the waterproofing of the walls of the large building at Front and California streets, San Francisco.

One of the most important contracts taken the past year was for all the concrete work on the new London, Paris National bank, at Market and Sansome streets, from plans by Architect Albert Pissis.

Mr. Bluxome has been a resident of San Francisco for a number of years, and he enjoys the confidence of leading architects and business men. He is an enthusiastic advocate of reinforced concrete construction.

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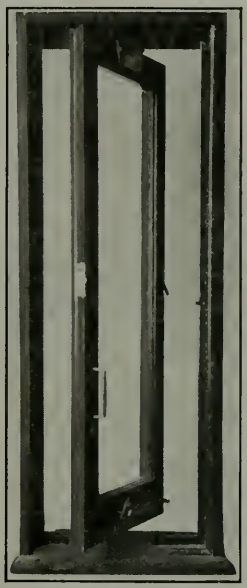

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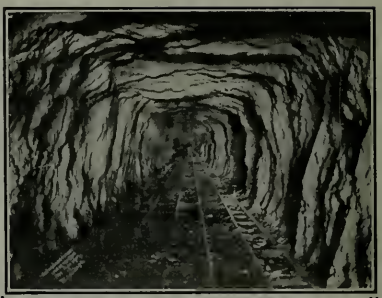

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Marble Deposits of California.

California is beginning to turn its attention to its native marbles. Extensive quarries are worked in Inyo county, Cal., and the existence of large bodies of marble in the desert of San Bernardino county has been known for some years, but until recently the deposits have remained untouched, except at Colton, where marble is quarried in small quantities. At Cadiz, a station on the Santa Fe Railway, 240 miles to the east of Los Angeles, many varieties of marble of fine quality are found. Marble of twenty or more colors is found in large quantity, and there are smaller deposits of marble of many colors, ranging from black to pure white, with red, blue of several tints, Persian gray and numerous other hues. The deposits also yield a beautiful black marble with figures of sea shells, named shell marble, and a black with lines of gold, which is said to be found in no other region except on the banks of the river Nile.

Big Waterproofing Contract for Parrott & Company.

Parrott & Company, manufacturers' agents of San Francisco, are now representing F. W. Bird & Son of East Waldpole, Mass., the original manufacturers of Hydrex Felt. These people unquestionably manufacture the best felts on the market today and the Parrott company is to be congratulated in securing such a strong agency. Architects and builders will be equally interested in the announcement that Parrott & Company will waterproof the magnificent new Hearst building; also that Mr. L. E. Boyle is now associated with the firm and has been made manager of the waterproofing department.

The Hearst building will probably be the most pretentious structure to be erected in San Francisco this year, and will complete the rehabilitation of the heart of the business section—the corner of Market and Third streets, which was also the site of the old Hearst building. Mr. Green, the architect, has been making his headquarters in San Francisco for some time, but he is now in the East and has sent Mr. Pond to San Francisco to superintend construction work and assist in the letting of all contracts. Architect Green has been the recipient of many congratulatory words for his splendid design.

Besides the Hearst job Parrott & Company have a number of other large waterproofing contracts in their territory which will keep their experts busy for some time to come.

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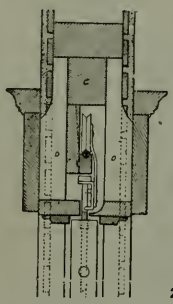

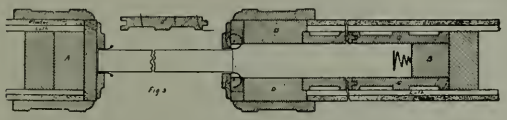

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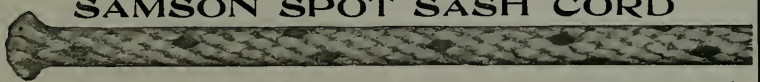

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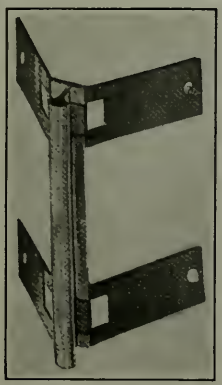

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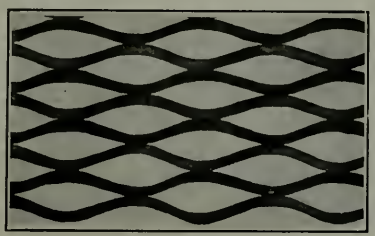

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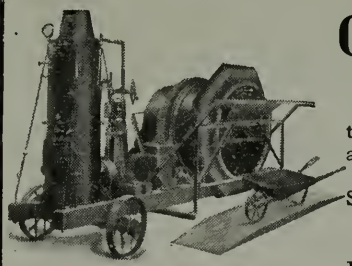

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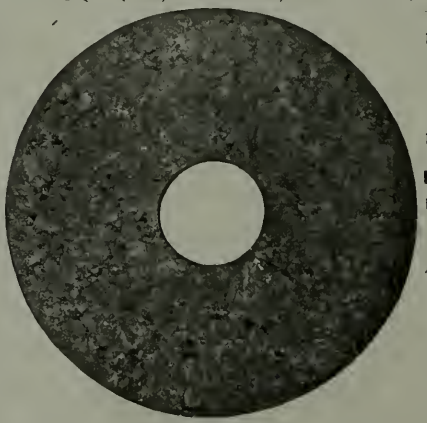

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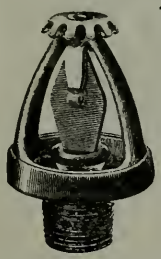
Architects Dissolve Partnership.

Dickey and Reed, architects, have dissolved partnership. Mr. Dickey retains the San Francisco and Sacramento offices, while Mr. Reed remains in Oakland.

Oliver and Foulkes, Crocker building, San Francisco, also have dissolved partnership, Mr. Foulkes retaining the offices in the Crocker building. Mr. Foulkes is preparing plans for a splendid $100,000 apartment house for the Scott and Van Arsdale interests.

Sales Manager for N. O. Nelson Mfg. Co.

The N. O. Nelson Company, dealers in plumbing supplies, announces the appointment of Mr. L. B. Yeiser, formerly with the Sanitary Company of Cleveland, as sales manager of the San Francisco office. Mr. Yeiser is well and favorably known to the California trade.



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Plant of Woburn Machine Company, Woburn, Mass., showing fire-proof and fume-proof roofing and siding Asbestos Protected Metal

Cupola Stack of Woburn Mochine Company, Woburn, Mass., demonstrating durability and fire-proof qualities of Asbestos Protected Metal

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It can't readily corrode because all excess of Phosphorous and Sulphur is removed by the *Open Hearth* process.

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Besides, "SCOTT'S" possesses the heaviest and richest Coating—"EXTRA COATED!"

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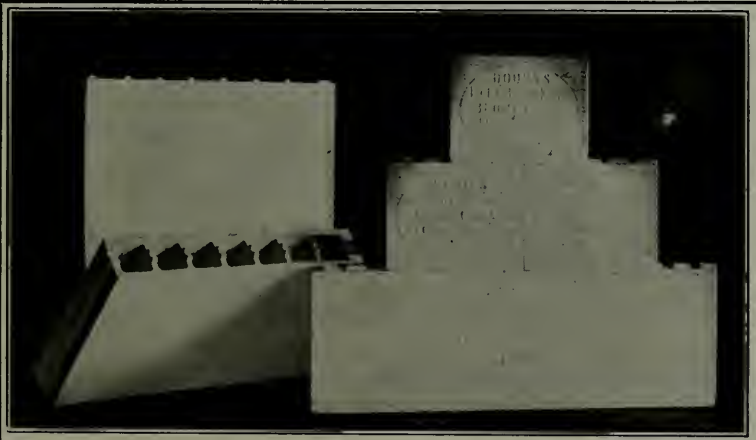

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